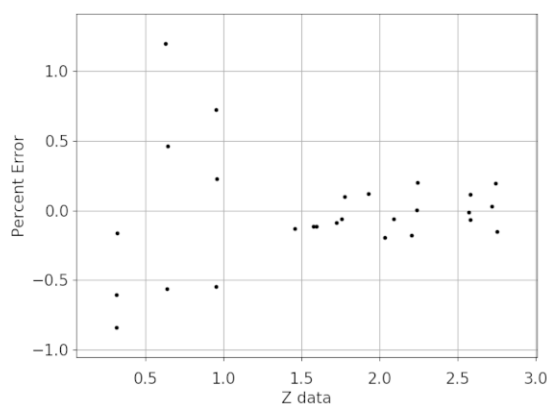
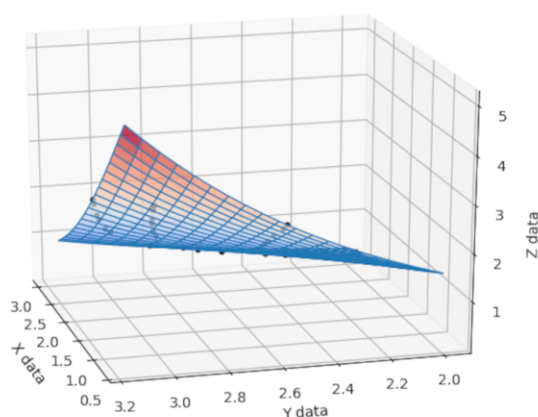


# pyeq3

an equation and curve-fitting library

## User Manual Version 12.5.2pre



```
Degrees of freedom (error): 21
Degrees of freedom (regression): 5
Chi-squared: 0.0003019803196875921
R-squared: 0.9999827602821499
R-squared adjusted: 0.9999786555874237
Model F-statistic: 243619.27670240606
Model F-statistic p-value: 1.1102230246251565e-16
Model log-likelihood: 115.6019648702202
AIC: -8.118664064460756
BIC: -7.830700316459794
Root Mean Squared Error (RMSE): 0.003344317013192026
```

```
Coefficient Covariance Matrix
[ 1.32410842e+24 -3.12911789e+12 -2.82768334e+12  1.75540470e+18
 -7.13198983e+12 -1.23881585e+12]
[-3.12911789e+12  4.68413830e+02  2.49389878e+02 -4.14824669e+06
 1.66073500e+01  1.40993301e+01]
[-2.82768334e+12  2.49389878e+02  1.35821154e+02 -3.74869531e+06
 1.64894989e+01  1.02153060e+01]
[ 1.75540470e+18 -4.14824669e+06 -3.74869531e+06  2.32718532e+12
 -9.45507812e+06 -1.64234361e+06]
[-7.13198983e+12  1.66073500e+01  1.64894989e+01 -9.45507812e+06
 3.95803535e+01  7.90457017e+00]
[-1.23881585e+12  1.40993301e+01  1.02153060e+01 -1.64234361e+06
 7.90457017e+00  3.07045189e+00]
```

James Phillips  
Robert Myhill

<https://github.com/bobmyhill/pyeq3>

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## INTRODUCING PYEQ3 12.5.2

### 1.1 Overview

pyeq3 is a large collection of python3 equations that perform curve fitting on 2D and 3D data, output source code in several computing languages, and run a genetic algorithm for initial parameter estimation. The module comes with cluster, parallel, IPython, GUI, NodeJS, and web-based graphical examples. It includes orthogonal distance and relative error regressions.

pyeq3 is released under a permissive license. It relies on numpy, scipy, and matplotlib.

- Homepage: <https://github.com/bobmyhill/pyeq3>
- Documentation: <http://pyeq3.readthedocs.io>
- Source code: <https://github.com/bobmyhill/pyeq3>
- Web App: <http://findcurves.com/>
- Discussion group: <https://groups.google.com/g/findcurves>

If you haven't yet installed pyeq3, you can go straight to *Requirements* for detailed instructions. After that, you might want to try out some ref-examples.

### 1.2 Citing pyeq3

There will soon be a Zenodo DOI with which you can cite this project. Please check back here before you publish.

### 1.3 Contributing to pyeq3

If you would like to contribute bug fixes, new functions or new modules to the existing codebase, please make a pull request at <https://github.com/bobmyhill/pyeq3/pulls>.

## 1.4 Requirements

- Python 3.7+
- Python modules: NumPy, SciPy, Matplotlib

## 1.5 Installation

Installation of pyeq3 is mostly platform independent. As long as you know how to use a terminal, the process should be straightforward. The following instructions should help, but let us know if you have any problems.

### 1.5.1 Dependencies

First, make sure you have a sufficiently recent version of python installed on your machine (see above for the latest requirements). To check your version of python, type the following in a terminal:

```
python --version
```

If your version is not recent enough, visit <https://www.python.org/> to find out how to install a newer version.

Once you have checked your version of python, you should make sure you have installed the python module pip. We will use this module to install BurnMan. If you don't have it already, you can install it by opening a terminal window and typing:

```
python -m ensurepip --upgrade
```

Mac users will also need to install Xcode, which can be found in the MacStore.

### 1.5.2 Stable version

If you are only interested in using pyeq3 (rather than developing the software), and you aren't interested in any of the latest changes, you can install the stable version by typing the following into a terminal window:

```
python -m pip install pyeq3
```

This method of installation does not give you easy access to all the examples, or the test suite. These can be found in the latest release package which can be downloaded from <https://github.com/bobmyhill/pyeq3/releases>.

### 1.5.3 Development version

If you want to install the development version of pyeq3 (with all the latest features), you will first need to download the source code. The best way to do this is by using git (a version control system). To install git, follow the instructions at <https://git-scm.com/downloads>.

Then, using a terminal, navigate to the directory into which you want to clone the BurnMan repository, and type

```
git clone https://github.com/bobmyhill/pyeq3.git
```

(If you don't want to use git, you can download the current main branch from <https://github.com/bobmyhill/pyeq3/archive/main.zip>.)

Once the repository is cloned, navigate to the top-level directory by typing `cd pyeq3` in the terminal, and then install pyeq3, either in static mode: `python -m pip install .` or in development mode (if you want to develop or modify the code): `python -m pip install -e ..`

### 1.5.4 Checking that the installation worked

To check that the installation has worked, navigate to the examples directory and try running the examples:

```
python <example-name>.py
```

## 1.6 Acknowledgement and Support

- This project was created by James R. Phillips. Almost all the functionality was created by him, as are most of the explanatory comments throughout the code.
- Ross Moffett is webmaster and maintainer of <http://www.findcurves.com>, a clone of James' original web app.



## CLASS STRUCTURE

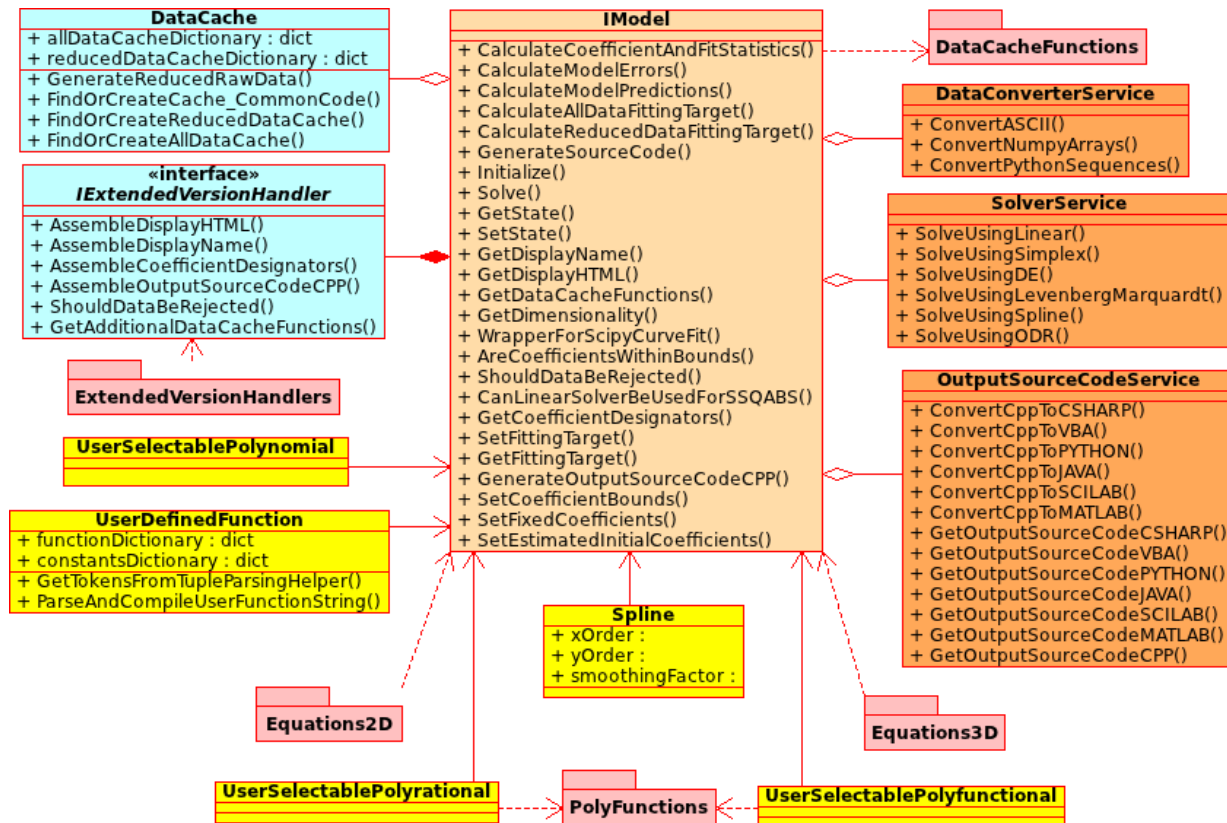


Fig. 1: The class structure of pyeq3.





## 2D MODELS

### 3.1 Astrophysics

- King 14 (King\_14)

- King 14

$$f(x) = k * [1/\sqrt{(1 + (x/r_c)^2)} - 1/\sqrt{(1 + (r_t/r_c)^2)}]^2$$

[k, r\_c, r\_t]

- King 14 With Offset

$$f(x) = k * [1/\sqrt{(1 + (x/r_c)^2)} - 1/\sqrt{(1 + (r_t/r_c)^2)}]^2 + \text{Offset}$$

[k, r\_c, r\_t, Offset]

### 3.2 BioScience

- Aphid Population Growth (AphidPopulationGrowth)

- Aphid Population Growth

$$N(t) = a * \exp(bt) * (1 + c * \exp(bt))^{-2}$$

[a, b, c]

- Aphid Population Growth With Offset

$$N(t) = a * \exp(bt) * (1 + c * \exp(bt))^{-2} + \text{Offset}$$

[a, b, c, Offset]

- von Bertalanffy Growth (BertalanffyGrowth)

- von Bertalanffy Growth

$$L(t) = L_{inf} * (1.0 - \exp(-K * (t - t_{zero})))$$

[Linf, K, tzero]

- von Bertalanffy Growth With Offset
 
$$L(t) = L_{inf} * (1.0 - \exp(-K * (t - t_{zero}))) + \text{Offset}$$
 [Linf, K, tzero, Offset]
- Beverton-Holt A (BevertonHoltA)
  - Beverton-Holt A
 
$$y = r / (1 + ((r - 1) / K) * x)$$
 [r, K]
  - Beverton-Holt A With Offset
 
$$y = r / (1 + ((r - 1) / K) * x) + \text{Offset}$$
 [r, K, Offset]
- Beverton-Holt B (BevertonHoltB)
  - Beverton-Holt B
 
$$y = rx / (1 + ((r - 1) / K) * x)$$
 [r, K]
  - Beverton-Holt B With Offset
 
$$y = rx / (1 + ((r - 1) / K) * x) + \text{Offset}$$
 [r, K, Offset]
- BioScience A (BioScienceA)
  - BioScience A
 
$$y = a * (1.0 - (b * c^x))$$
 [a, b, c]
  - BioScience A With Offset
 
$$y = a * (1.0 - (b * c^x)) + \text{Offset}$$
 [a, b, c, Offset]
- BioScience B (BioScienceB)
  - BioScience B
 
$$y = a * (1.0 - (1.0 + (x/b)^c)^{-1.0*d})$$
 [a, b, c, d]
  - BioScience B With Offset
 
$$y = a * (1.0 - (1.0 + (x/b)^c)^{-1.0*d}) + \text{Offset}$$
 [a, b, c, d, Offset]
- Cellular Conductance (CellularConductance)

- Cellular Conductance

$$g = p3 / (1 + \exp((v - p1) / p2)) + p4 * \exp((v - 45) / p5)$$

[p1, p2, p3, p4, p5]

- Cellular Conductance With Offset

$$g = p3 / (1 + \exp((v - p1) / p2)) + p4 * \exp((v - 45) / p5) + \text{Offset}$$

[p1, p2, p3, p4, p5, Offset]

- Derek Duncan Custom Equation (DerekDuncanCustomEquation)

- Derek Duncan Custom Equation

$$y = a / (1 + \exp(-1/b * (x - c)))^d$$

[a, b, c, d]

- Derek Duncan Custom Equation With Offset

$$y = a / (1 + \exp(-1/b * (x - c)))^d + \text{Offset}$$

[a, b, c, d, Offset]

- Dose-Response A (DoseResponseA)

- Dose-Response A

$$y = b + (a - b) / (1 + 10^{x-c})$$

[a, b, c]

- Dose-Response B (DoseResponseB)

- Dose-Response B

$$y = b + (a - b) / (1 + 10^{c-x})$$

[a, b, c]

- Dose-Response C (DoseResponseC)

- Dose-Response C

$$y = b + (a - b) / (1 + 10^{d*(x-c)})$$

[a, b, c, d]

- Dose-Response D (DoseResponseD)

- Dose-Response D

$$y = b + (a - b) / (1 + 10^{d*(c-x)})$$

[a, b, c, d]

- Dose-Response E (DoseResponseE)

- Dose-Response E

$$y = b + (a - b) / (1 + (x/c)^d)$$

[a, b, c, d]

- Generalized Negative Exponential (`GeneralizedNegativeExponential`)

- Generalized Negative Exponential

$$y = a * (1.0 - \exp(-bx))^c$$

[a, b, c]

- Generalized Negative Exponential With Offset

$$y = a * (1.0 - \exp(-bx))^c + \text{Offset}$$

[a, b, c, Offset]

- Generalized Product Accumulation (`GeneralizedProductAccumulation`)

- Generalized Product Accumulation

$$y = a(b - x)/(c + (b - x)) + d(b - x) + f$$

[a, b, c, d, f]

- Generalized Substrate Depletion (`GeneralizedSubstrateDepletion`)

- Generalized Substrate Depletion

$$y = ax/(b + x) - cx - d$$

[a, b, c, d]

- High-Low Affinity (`HighLowAffinity`)

- High-Low Affinity

$$y = abx/(1 + bx)$$

[a, b]

- High-Low Affinity With Offset

$$y = abx/(1 + bx) + \text{Offset}$$

[a, b, Offset]

- High-Low Affinity Double (`HighLowAffinityDouble`)

- High-Low Affinity Double

$$y = abx/(1 + bx) + cdx/(1 + dx)$$

[a, b, c, d]

- High-Low Affinity Double With Offset

$$y = abx/(1 + bx) + cdx/(1 + dx) + \text{Offset}$$

[a, b, c, d, Offset]

- High-Low Affinity Isotope Displacement ([Hot] subsumed) (`HighLowAffinityIsotopeDisplacement`)

- High-Low Affinity Isotope Displacement ([Hot] subsumed)  
$$y = ab/(1 + bx)$$

[a, b]
- High-Low Affinity Isotope Displacement ([Hot] subsumed) With Offset  
$$y = ab/(1 + bx) + \text{Offset}$$

[a, b, Offset]
- High-Low Affinity Double Isotope Displacement ([Hot] subsumed)  
(HighLowAffinityIsotopeDisplacementDouble)
  - High-Low Affinity Double Isotope Displacement ([Hot] subsumed)  
$$y = ab/(1 + bx) + cd/(1 + dx)$$

[a, b, c, d]
  - High-Low Affinity Double Isotope Displacement ([Hot] subsumed) With Offset  
$$y = ab/(1 + bx) + cd/(1 + dx) + \text{Offset}$$

[a, b, c, d, Offset]
- Hyperbolic A (HyperbolicA)
  - Hyperbolic A  
$$y = (a + x)/(b + x)$$

[a, b]
  - Hyperbolic A With Offset  
$$y = (a + x)/(b + x) + \text{Offset}$$

[a, b, Offset]
- Hyperbolic B (HyperbolicB)
  - Hyperbolic B  
$$y = (a + bx)/(c + x)$$

[a, b, c]
  - Hyperbolic B With Offset  
$$y = (a + bx)/(c + x) + \text{Offset}$$

[a, b, c, Offset]
- Hyperbolic C (HyperbolicC)
  - Hyperbolic C  
$$y = (a + x)/(b + cx)$$

[a, b, c]

- Hyperbolic C With Offset
$$y = (a + x)/(b + cx) + \text{Offset}$$

[a, b, c, Offset]
- Hyperbolic D (HyperbolicD)
  - Hyperbolic D
$$y = (a + bx)/(c + dx)$$

[a, b, c, d]
  - Hyperbolic D With Offset
$$y = (a + bx)/(c + dx) + \text{Offset}$$

[a, b, c, d, Offset]
- Hyperbolic E (HyperbolicE)
  - Hyperbolic E
$$y = ax/(b + x)$$

[a, b]
  - Hyperbolic E With Offset
$$y = ax/(b + x) + \text{Offset}$$

[a, b, Offset]
- Hyperbolic F (HyperbolicF)
  - Hyperbolic F
$$y = ax/(b + x) + cx$$

[a, b, c]
  - Hyperbolic F With Offset
$$y = ax/(b + x) + cx + \text{Offset}$$

[a, b, c, Offset]
- Hyperbolic G (HyperbolicG)
  - Hyperbolic G
$$y = ax/(b + x) + cx/(d + x)$$

[a, b, c, d]
  - Hyperbolic G With Offset
$$y = ax/(b + x) + cx/(d + x) + \text{Offset}$$

[a, b, c, d, Offset]
- Hyperbolic H (HyperbolicH)

- Hyperbolic H

$$y = ax/(b + x) + cx/(d + x) + fx$$

[a, b, c, d, f]

- Hyperbolic H With Offset

$$y = ax/(b + x) + cx/(d + x) + fx + \text{Offset}$$

[a, b, c, d, f, Offset]

- Hyperbolic I (HyperbolicI)

- Hyperbolic I

$$y = ab/(b + x)$$

[a, b]

- Hyperbolic I With Offset

$$y = ab/(b + x) + \text{Offset}$$

[a, b, Offset]

- Hyperbolic J (HyperbolicJ)

- Hyperbolic J

$$y = x/(a + bx)$$

[a, b]

- Hyperbolic J With Offset

$$y = x/(a + bx) + \text{Offset}$$

[a, b, Offset]

- Hyperbolic Logistic (HyperbolicLogistic)

- Hyperbolic Logistic

$$y = ax^b/(c + x^b)$$

[a, b, c]

- Hyperbolic Logistic With Offset

$$y = ax^b/(c + x^b) + \text{Offset}$$

[a, b, c, Offset]

- Jorge Rabinovich Population Growth (JorgeRabinovichPopulationGrowth)

- Jorge Rabinovich Population Growth

$$Y = (P1 * CC)/(P1 + (CC - P1) * \exp(-R * X))$$

[P1, CC, R]



- Jorge Rabinovich Population Growth With Offset
 
$$Y = (P1 * CC) / (P1 + (CC - P1) * \exp(-R * X)) + \text{Offset}$$

[P1, CC, R, Offset]
- Membrane Transport (**MembraneTransport**)
  - Membrane Transport
 
$$y = a(x - b) / (x^2 + cx + d)$$

[a, b, c, d]
  - Membrane Transport With Offset
 
$$y = a(x - b) / (x^2 + cx + d) + \text{Offset}$$

[a, b, c, d, Offset]
- Michaelis-Menten (**MichaelisMenten**)
  - Michaelis-Menten
 
$$y = ax / (b + x)$$

[a, b]
  - Michaelis-Menten With Offset
 
$$y = ax / (b + x) + \text{Offset}$$

[a, b, Offset]
- Michaelis-Menten Double (**MichaelisMentenDouble**)
  - Michaelis-Menten Double
 
$$y = ax / (b + x) + cx / (d + x)$$

[a, b, c, d]
  - Michaelis-Menten Double With Offset
 
$$y = ax / (b + x) + cx / (d + x) + \text{Offset}$$

[a, b, c, d, Offset]
- Michaelis-Menten Isotope Displacement Double ([Hot] subsumed) (**MichaelisMentenDoubleIsotopeDisplacement**)
  - Michaelis-Menten Isotope Displacement Double ([Hot] subsumed)
 
$$y = a / (b + x) + c / (d + x)$$

[a, b, c, d]
  - Michaelis-Menten Isotope Displacement Double ([Hot] subsumed) With Offset
 
$$y = a / (b + x) + c / (d + x) + \text{Offset}$$

[a, b, c, d, Offset]

- Michaelis-Menten Isotope Displacement ([Hot] subsumed) (`MichaelisMentenIsotopeDisplacement`)
  - Michaelis-Menten Isotope Displacement ([Hot] subsumed)
$$y = a / (b + x)$$
$$[a, b]$$
  - Michaelis-Menten Isotope Displacement ([Hot] subsumed) With Offset
$$y = a / (b + x) + \text{Offset}$$
$$[a, b, \text{Offset}]$$
- Michaelis-Menten Product Accumulation (`MichaelisMentenProductAccumulation`)
  - Michaelis-Menten Product Accumulation
$$y = a(b - x) / (c + (b - x))$$
$$[a, b, c]$$
  - Michaelis-Menten Product Accumulation With Offset
$$y = a(b - x) / (c + (b - x)) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Negative Exponential (`NegativeExponential`)
  - Negative Exponential
$$y = a * (1.0 - \exp(-bx))$$
$$[a, b]$$
  - Negative Exponential With Offset
$$y = a * (1.0 - \exp(-bx)) + \text{Offset}$$
$$[a, b, \text{Offset}]$$
- New Zealand Ecology Logistic 1 (`NewZealandEcologyLogistic1`)
  - New Zealand Ecology Logistic 1
$$n = B0 + ((B1 - B0) / (1.0 + \exp((B2 + D) * B3)))$$
$$[B0, B1, B2, B3]$$
- New Zealand Ecology Logistic 2 (`NewZealandEcologyLogistic2`)
  - New Zealand Ecology Logistic 2
$$n = B0 + ((B1 - B0) / (1.0 + \exp((B2 + D + (B4 * D^2)) * B3)))$$
$$[B0, B1, B2, B3, B4]$$
- Plant Disease Exponential Model (`PlantDisease_Exponential`)
  - Plant Disease Exponential Model
$$\text{Incidence} = y0 * \exp(r * \text{time})$$

[y0, r]

- Plant Disease Exponential Model With Offset

$$Incidence = y0 * \exp(r * time) + Offset$$

[y0, r, Offset]

- Plant Disease Gompertz Model (PlantDisease\_Gompertz)

- Plant Disease Gompertz Model

$$Incidence = \exp(\ln(y0) * \exp(-r * time))$$

[y0, r]

- Plant Disease Gompertz Model With Offset

$$Incidence = \exp(\ln(y0) * \exp(-r * time)) + Offset$$

[y0, r, Offset]

- Plant Disease Logistic Model (PlantDisease\_Logistic)

- Plant Disease Logistic Model

$$Incidence = 1 / (1 + (1 - y0) / (y0 * \exp(-r * time)))$$

[y0, r]

- Plant Disease Logistic Model With Offset

$$Incidence = 1 / (1 + (1 - y0) / (y0 * \exp(-r * time))) + Offset$$

[y0, r, Offset]

- Plant Disease Monomolecular Model (PlantDisease\_Monomolecular)

- Plant Disease Monomolecular Model

$$Incidence = 1 - ((1 - y0) * \exp(-r * time))$$

[y0, r]

- Plant Disease Monomolecular Model With Offset

$$Incidence = 1 - ((1 - y0) * \exp(-r * time)) + Offset$$

[y0, r, Offset]

- Plant Disease Weibull Model (PlantDisease\_Weibull)

- Plant Disease Weibull Model

$$Incidence = 1 - \exp(-1.0 * ((time - a) / b)^c)$$

[a, b, c]

- Plant Disease Weibull Model With Offset

$$Incidence = 1 - \exp(-1.0 * ((time - a) / b)^c) + Offset$$

[a, b, c, Offset]

- Plant Disease Weibull Model Scaled (PlantDisease\_WeibullScaled)

- Plant Disease Weibull Model Scaled

$$y = Scale * (1 - \exp(-1.0 * ((time - a)/b)^c))$$

[a, b, c, Scale]

- Plant Disease Weibull Model Scaled With Offset

$$y = Scale * (1 - \exp(-1.0 * ((time - a)/b)^c)) + Offset$$

[a, b, c, Scale, Offset]

- Preece And Baines Growth (PreeceAndBaines)

- Preece And Baines Growth

$$y = a - 2(a - b) / (\exp(c(x - d)) + \exp(f(x - d)))$$

[a, b, c, d, f]

- Scaled Log (ScaledLog)

- Scaled Log

$$y = a * \log(x)$$

[a]

- Scaled Log With Offset

$$y = a * \log(x) + Offset$$

[a, Offset]

- Scaled Log Transform (ScaledLog\_Transform)

- Scaled Log Transform

$$y = a * \log(bx + c)$$

[a, b, c]

- Scaled Log Transform With Offset

$$y = a * \log(bx + c) + Offset$$

[a, b, c, Offset]

- Scaled Power (ScaledPower)

- Scaled Power

$$y = a * x^b$$

[a, b]

- Scaled Power With Offset

$$y = a * x^b + Offset$$

[a, b, Offset]

- Scaled Power Transform (ScaledPower\_Transform)
  - Scaled Power Transform
 
$$y = a * (cx + d)^b$$

[a, b, c, d]
  - Scaled Power Transform With Offset
 
$$y = a * (cx + d)^b + \text{Offset}$$

[a, b, c, d, Offset]
- Standard 3-Parameter Logistic Equation (StandardLogistic3Parameter)
  - Standard 3-Parameter Logistic Equation
 
$$y = d + (a - d) / (1 + (x/c))$$

[a, c, d]
- Standard 4-Parameter Logistic Equation (StandardLogistic4Parameter)
  - Standard 4-Parameter Logistic Equation
 
$$y = d + (a - d) / (1 + (x/c)^b)$$

[a, b, c, d]
- Standard 5-Parameter Logistic Equation (StandardLogistic5Parameter)
  - Standard 5-Parameter Logistic Equation
 
$$y = d + (a - d) / (1 + (x/c)^b)^f$$

[a, b, c, d, f]
- Weibull (Weibull)
  - Weibull
 
$$y = a * (1.0 - \exp(-b * (x - c)^d))$$

[a, b, c, d]
  - Weibull With Offset
 
$$y = a * (1.0 - \exp(-b * (x - c)^d)) + \text{Offset}$$

[a, b, c, d, Offset]
- Xiaogang Peng Immunoassay (XiaogangPengImmunoassay)
  - Xiaogang Peng Immunoassay
 
$$y = K / (1.0 + \exp(-1.0 * (a + b \log(x) + cx)))$$

[K, a, b, c]

- Xiaogang Peng Immunoassay With Offset

$$y = K / (1.0 + \exp(-1.0 * (a + b \log(x) + cx))) + \text{Offset}$$

[K, a, b, c, Offset]

### 3.3 BurkardtCollectionBased

- Arcsin CDF Based (arcsin\_cdf)

- Arcsin CDF Based

$$y = a * \arcsin((bx + c)/d)$$

[a, b, c, d]

- Arcsin CDF Based With Offset

$$y = a * \arcsin((bx + c)/d) + \text{Offset}$$

[a, b, c, d, Offset]

- Arcsin PDF Based (arcsin\_pdf)

- Arcsin PDF Based

$$y = a / \sqrt{(b^2 - x^2)}$$

[a, b]

- Arcsin PDF Based With Offset

$$y = a / \sqrt{(b^2 - x^2)} + \text{Offset}$$

[a, b, Offset]

- Bradford CDF Based A (bradford\_cdf\_a)

- Bradford CDF Based A

$$y = \ln(1.0 + c * (x - a)/(b - a)) / \ln(c + 1.0)$$

[a, b, c]

- Bradford CDF Based A With Offset

$$y = \ln(1.0 + c * (x - a)/(b - a)) / \ln(c + 1.0) + \text{Offset}$$

[a, b, c, Offset]

- Bradford CDF Based B (bradford\_cdf\_b)

- Bradford CDF Based B

$$y = d * \ln(1.0 + c * (x - a)/(b - a)) / \ln(c + 1.0)$$

[a, b, c, d]

- Bradford CDF Based B With Offset
 
$$y = d * \ln(1.0 + c * (x - a) / (b - a)) / \ln(c + 1.0) + \text{Offset}$$

[a, b, c, d, Offset]
- Bradford PDF Based (bradford\_pdf)
  - Bradford PDF Based
 
$$y = c / ((c * (x - a) + b - a) * \ln(c + 1.0))$$

[a, b, c]
  - Bradford PDF Based With Offset
 
$$y = c / ((c * (x - a) + b - a) * \ln(c + 1.0)) + \text{Offset}$$

[a, b, c, Offset]
- Burr CDF Based A (burr\_cdf\_a)
  - Burr CDF Based A
 
$$y = 1.0 / (1.0 + (b / (x - a))^c)^d$$

[a, b, c, d]
  - Burr CDF Based A With Offset
 
$$y = 1.0 / (1.0 + (b / (x - a))^c)^d + \text{Offset}$$

[a, b, c, d, Offset]
- Burr CDF Based B (burr\_cdf\_b)
  - Burr CDF Based B
 
$$y = f / (1.0 + (b / (x - a))^c)^d$$

[a, b, c, d, f]
  - Burr CDF Based B With Offset
 
$$y = f / (1.0 + (b / (x - a))^c)^d + \text{Offset}$$

[a, b, c, d, f, Offset]
- Burr PDF Based (burr\_pdf)
  - Burr PDF Based
 
$$y = (c * d / b) * ((x - a) / b)^{(-c-1.0)} * (1.0 + ((x - a) / b)^{(-c)})^{(-d-1.0)}$$

[a, b, c, d]
  - Burr PDF Based With Offset
 
$$y = (c * d / b) * ((x - a) / b)^{(-c-1.0)} * (1.0 + ((x - a) / b)^{(-c)})^{(-d-1.0)} + \text{Offset}$$

[a, b, c, d, Offset]
- Dipole CDF Based (dipole\_cdf)

- Dipole CDF Based

$$y = a * \arctan(x) + b/x$$

[a, b]

- Dipole CDF Based With Offset

$$y = a * \arctan(x) + b/x + \text{Offset}$$

[a, b, Offset]

- Exponential PDF Based (`exponential_pdf`)

- Exponential PDF Based

$$y = (1.0/b) * \exp((a - x)/b)$$

[a, b]

- Exponential PDF Based With Offset

$$y = (1.0/b) * \exp((a - x)/b) + \text{Offset}$$

[a, b, Offset]

- Exponential PDF Based Scaled (`exponential_pdf_scaled`)

- Exponential PDF Based Scaled

$$y = \text{Scale} * (1.0/b) * \exp((a - x)/b)$$

[a, b, Scale]

- Exponential PDF Based Scaled With Offset

$$y = \text{Scale} * (1.0/b) * \exp((a - x)/b) + \text{Offset}$$

[a, b, Scale, Offset]

- Extreme Values CDF Based A (`extreme_values_cdf_a`)

- Extreme Values CDF Based A

$$y = \exp(-\exp(-(x - a)/b))$$

[a, b]

- Extreme Values CDF Based A With Offset

$$y = \exp(-\exp(-(x - a)/b)) + \text{Offset}$$

[a, b, Offset]

- Extreme Values CDF Based B (`extreme_values_cdf_b`)

- Extreme Values CDF Based B

$$y = c * \exp(-\exp(-(x - a)/b))$$

[a, b, c]



- Extreme Values CDF Based B With Offset
$$y = c * \exp(-\exp(-(x - a)/b)) + \text{Offset}$$

[a, b, c, Offset]
- Extreme Values PDF Based (`extreme_values_pdf`)
  - Extreme Values PDF Based
$$y = (1.0/b) * \exp(((a - x)/b) - \exp((a - x)/b))$$

[a, b]
  - Extreme Values PDF Based With Offset
$$y = (1.0/b) * \exp(((a - x)/b) - \exp((a - x)/b)) + \text{Offset}$$

[a, b, Offset]
- Fisk CDF Based A (`fisk_cdf_a`)
  - Fisk CDF Based A
$$y = 1.0/(1.0 + (b/(x - a))^c)$$

[a, b, c]
  - Fisk CDF Based A With Offset
$$y = 1.0/(1.0 + (b/(x - a))^c) + \text{Offset}$$

[a, b, c, Offset]
- Fisk CDF Based B (`fisk_cdf_b`)
  - Fisk CDF Based B
$$y = d/(1.0 + (b/(x - a))^c)$$

[a, b, c, d]
  - Fisk CDF Based B With Offset
$$y = d/(1.0 + (b/(x - a))^c) + \text{Offset}$$

[a, b, c, d, Offset]
- Fisk PDF Based (`fisk_pdf`)
  - Fisk PDF Based
$$y = (c/b) * ((x - a)/b)^{(c-1.0)} / (1.0 + ((x - a)/b)^c)^2$$

[a, b, c]
  - Fisk PDF Based With Offset
$$y = (c/b) * ((x - a)/b)^{(c-1.0)} / (1.0 + ((x - a)/b)^c)^2 + \text{Offset}$$

[a, b, c, Offset]
- Folded Normal PDF Based (`folded_normal_pdf`)

- Folded Normal PDF Based

$$y = c * (1/b) * \cosh(a * x/b^2) * \exp(-0.5 * (x^2 + a^2)/b^2)$$

[a, b, c]

- Folded Normal PDF Based With Offset

$$y = c * (1/b) * \cosh(a * x/b^2) * \exp(-0.5 * (x^2 + a^2)/b^2) + \text{Offset}$$

[a, b, c, Offset]

- Frechet CDF Based A (`frechet_cdf_a`)

- Frechet CDF Based A

$$y = \exp(-1.0/x^a)$$

[a]

- Frechet CDF Based A With Offset

$$y = \exp(-1.0/x^a) + \text{Offset}$$

[a, Offset]

- Frechet CDF Based B (`frechet_cdf_b`)

- Frechet CDF Based B

$$y = b * \exp(-1.0/x^a)$$

[a, b]

- Frechet CDF Based B With Offset

$$y = b * \exp(-1.0/x^a) + \text{Offset}$$

[a, b, Offset]

- Frechet PDF Based A (`frechet_pdf_a`)

- Frechet PDF Based A

$$y = \exp(-1.0/x^a)/x^{(a+1.0)}$$

[a]

- Frechet PDF Based A With Offset

$$y = \exp(-1.0/x^a)/x^{(a+1.0)} + \text{Offset}$$

[a, Offset]

- Frechet PDF Based B (`frechet_pdf_b`)

- Frechet PDF Based B

$$y = b * \exp(-1.0/x^a)/x^{(a+1.0)}$$

[a, b]

- Frechet PDF Based B With Offset
 
$$y = b * \exp(-1.0/x^a)/x^{(a+1.0)} + \text{Offset}$$

[a, b, Offset]
- Genlogistic CDF Based A (`genlogistic_cdf_a`)
  - Genlogistic CDF Based A
 
$$y = (1.0/(1.0 + \exp(-(x - a)/b)))^c$$

[a, b, c]
  - Genlogistic CDF Based A With Offset
 
$$y = (1.0/(1.0 + \exp(-(x - a)/b)))^c + \text{Offset}$$

[a, b, c, Offset]
- Genlogistic CDF Based B (`genlogistic_cdf_b`)
  - Genlogistic CDF Based B
 
$$y = (d/(1.0 + \exp(-(x - a)/b)))^c$$

[a, b, c, d]
  - Genlogistic CDF Based B With Offset
 
$$y = (d/(1.0 + \exp(-(x - a)/b)))^c + \text{Offset}$$

[a, b, c, d, Offset]
- Genlogistic PDF Based (`genlogistic_pdf`)
  - Genlogistic PDF Based
 
$$y = (c/b) * \exp(-((x - a)/b))/(1.0 + \exp(-((x - a)/b)))^{(c+1.0)}$$

[a, b, c]
  - Genlogistic PDF Based With Offset
 
$$y = (c/b) * \exp(-((x - a)/b))/(1.0 + \exp(-((x - a)/b)))^{(c+1.0)} + \text{Offset}$$

[a, b, c, Offset]
- Gompertz CDF Based (`gompertz_cdf`)
  - Gompertz CDF Based
 
$$y = 1.0 - \exp(-b * (a^x - 1.0)/\ln(a))$$

[a, b]
  - Gompertz CDF Based With Offset
 
$$y = 1.0 - \exp(-b * (a^x - 1.0)/\ln(a)) + \text{Offset}$$

[a, b, Offset]
- Gompertz CDF Based Scaled (`gompertz_cdf_scaled`)

- Gompertz CDF Based Scaled

$$y = Scale * (1.0 - \exp(-b * (a^x - 1.0)/\ln(a)))$$

[a, b, Scale]

- Gompertz CDF Based Scaled With Offset

$$y = Scale * (1.0 - \exp(-b * (a^x - 1.0)/\ln(a))) + Offset$$

[a, b, Scale, Offset]

- Gumbel CDF Based (`gumbel_cdf`)

- Gumbel CDF Based

$$y = a * \exp(-\exp(-x))$$

[a]

- Gumbel CDF Based With Offset

$$y = a * \exp(-\exp(-x)) + Offset$$

[a, Offset]

- Gumbel PDF Based (`gumbel_pdf`)

- Gumbel PDF Based

$$y = a * \exp(-x - \exp(-x))$$

[a]

- Gumbel PDF Based With Offset

$$y = a * \exp(-x - \exp(-x)) + Offset$$

[a, Offset]

- Half Normal PDF Based (`half_normal_pdf`)

- Half Normal PDF Based

$$y = c * (1.0/b) * \exp(-0.5 * ((x - a)/b) * ((x - a)/b))$$

[a, b, c]

- Half Normal PDF Based With Offset

$$y = c * (1.0/b) * \exp(-0.5 * ((x - a)/b) * ((x - a)/b)) + Offset$$

[a, b, c, Offset]

- Inverse\_gaussian PDF Based A (`inverse_gaussian_pdf_a`)

- Inverse\_gaussian PDF Based A

$$y = \sqrt{(b/(c * x^3))} * \exp(-b * (x - a)^2 / (2.0 * a^2 * x))$$

[a, b, c]

- Inverse\_gaussian PDF Based A With Offset
$$y = \sqrt{(b/(c * x^3))} * \exp(-b * (x - a)^2 / (2.0 * a^2 * x)) + \text{Offset}$$

[a, b, c, Offset]
- Inverse\_gaussian PDF Based B (inverse\_gaussian\_pdf\_b)
  - Inverse\_gaussian PDF Based B
$$y = \sqrt{(b/(c * x^3))} * \exp(-b * (x - a)^2 / (2.0 * a^2 * x))$$

[a, b, c, d]
  - Inverse\_gaussian PDF Based B With Offset
$$y = \sqrt{(b/(c * x^3))} * \exp(-b * (x - a)^2 / (2.0 * a^2 * x)) + \text{Offset}$$

[a, b, c, d, Offset]
- Levy PDF Based (levy\_pdf)
  - Levy PDF Based
$$y = b^{0.5} * \exp(-b / (2.0 * (x - a))) / \sqrt{((x - a)^3)}$$

[a, b]
  - Levy PDF Based With Offset
$$y = b^{0.5} * \exp(-b / (2.0 * (x - a))) / \sqrt{((x - a)^3)} + \text{Offset}$$

[a, b, Offset]
- Levy PDF Based Scaled (levy\_pdf\_scaled)
  - Levy PDF Based Scaled
$$y = \text{Scale} * b^{0.5} * \exp(-b / (2.0 * (x - a))) / \sqrt{((x - a)^3)}$$

[a, b, Scale]
  - Levy PDF Based Scaled With Offset
$$y = \text{Scale} * b^{0.5} * \exp(-b / (2.0 * (x - a))) / \sqrt{((x - a)^3)} + \text{Offset}$$

[a, b, Scale, Offset]
- Log Normal PDF Based (log\_normal\_pdf)
  - Log Normal PDF Based
$$y = \exp(-0.5 * ((\ln(x) - a)/b)^2) / (b * x)$$

[a, b]
  - Log Normal PDF Based With Offset
$$y = \exp(-0.5 * ((\ln(x) - a)/b)^2) / (b * x) + \text{Offset}$$

[a, b, Offset]

- Logistic PDF Based (`logistic_pdf`)
  - Logistic PDF Based
$$y = \exp((a - x)/b) / (b * (1.0 + \exp((a - x)/b))^2)$$
$$[a, b]$$
  - Logistic PDF Based With Offset
$$y = \exp((a - x)/b) / (b * (1.0 + \exp((a - x)/b))^2) + \text{Offset}$$
$$[a, b, \text{Offset}]$$
- Pareto PDF Based (`pareto_pdf`)
  - Pareto PDF Based
$$y = b * a^b / x^{(b+1.0)}$$
$$[a, b]$$
  - Pareto PDF Based With Offset
$$y = b * a^b / x^{(b+1.0)} + \text{Offset}$$
$$[a, b, \text{Offset}]$$
- Power PDF Based (`power_pdf`)
  - Power PDF Based
$$y = (a/b) * (x/b)^{(a-1.0)}$$
$$[a, b]$$
  - Power PDF Based With Offset
$$y = (a/b) * (x/b)^{(a-1.0)} + \text{Offset}$$
$$[a, b, \text{Offset}]$$
- Rayleigh CDF Based A (`rayleigh_cdf_a`)
  - Rayleigh CDF Based A
$$y = 1.0 - \exp(-x^2 / (2.0 * a^2))$$
$$[a]$$
  - Rayleigh CDF Based A With Offset
$$y = 1.0 - \exp(-x^2 / (2.0 * a^2)) + \text{Offset}$$
$$[a, \text{Offset}]$$
- Rayleigh CDF Based B (`rayleigh_cdf_b`)
  - Rayleigh CDF Based B
$$y = b * \exp(-x^2 / (2.0 * a^2))$$
$$[a, b]$$

- Rayleigh CDF Based B With Offset
$$y = b * \exp(-x^2/(2.0 * a^2)) + \text{Offset}$$

[a, b, Offset]
- Rayleigh PDF Based (rayleigh\_pdf)
  - Rayleigh PDF Based
$$y = (x/a^2) * \exp(-x^2/(2.0 * a^2))$$

[a]
  - Rayleigh PDF Based With Offset
$$y = (x/a^2) * \exp(-x^2/(2.0 * a^2)) + \text{Offset}$$

[a, Offset]
- Rayleigh PDF Based Scaled (rayleigh\_pdf\_scaled)
  - Rayleigh PDF Based Scaled
$$y = \text{Scale} * (x/a^2) * \exp(-x^2/(2.0 * a^2))$$

[a, Scale]
  - Rayleigh PDF Based Scaled With Offset
$$y = \text{Scale} * (x/a^2) * \exp(-x^2/(2.0 * a^2)) + \text{Offset}$$

[a, Scale, Offset]
- Reciprocal CDF Based (reciprocal\_cdf)
  - Reciprocal CDF Based
$$y = \ln(a/x)/\ln(a/b)$$

[a, b]
  - Reciprocal CDF Based With Offset
$$y = \ln(a/x)/\ln(a/b) + \text{Offset}$$

[a, b, Offset]
- Sech CDF Based (sech\_cdf)
  - Sech CDF Based
$$y = c * \text{atan}(\exp((x - a)/b))$$

[a, b, c]
  - Sech CDF Based With Offset
$$y = c * \text{atan}(\exp((x - a)/b)) + \text{Offset}$$

[a, b, c, Offset]
- Weibull CDF Based A (weibull\_cdf\_a)

- Weibull CDF Based A
 
$$y = 1.0 / \exp(((x - a)/b)^c)$$
 [a, b, c]
- Weibull CDF Based A With Offset
 
$$y = 1.0 / \exp(((x - a)/b)^c) + \text{Offset}$$
 [a, b, c, Offset]
- Weibull CDF Based B (weibull\_cdf\_b)
  - Weibull CDF Based B
 
$$y = d / \exp(((x - a)/b)^c)$$
 [a, b, c, d]
  - Weibull CDF Based B With Offset
 
$$y = d / \exp(((x - a)/b)^c) + \text{Offset}$$
 [a, b, c, d, Offset]
- Weibull PDF Based (weibull\_pdf)
  - Weibull PDF Based
 
$$y = (c/b) * ((x - a)/b)^{(c-1.0)} / \exp(((x - a)/b)^c)$$
 [a, b, c]
  - Weibull PDF Based With Offset
 
$$y = (c/b) * ((x - a)/b)^{(c-1.0)} / \exp(((x - a)/b)^c) + \text{Offset}$$
 [a, b, c, Offset]

## 3.4 Engineering

- Dispersion Optical (DispersionOptical)
  - Dispersion Optical
 
$$n^2(x) = A1 + A2 * x^2 + A3/x^2 + A4/x^4$$
 [A1, A2, A3, A4]
- Dispersion Optical Square Root (DispersionOpticalSqrt)
  - Dispersion Optical Square Root
 
$$n = (A1 + A2 * x^2 + A3/x^2 + A4/x^4)^{0.5}$$
 [A1, A2, A3, A4]
- Electron Beam Lithography Point Spread (ElectronBeamLithographyPointSpread)



- Electron Beam Lithography Point Spread
 
$$y = a * \exp(-b * x) + c * \exp(-(x - d)^2 / f^2) + g * \exp(-(x - h)^2 / i^2) + j * \exp(-(x - k)^2 / l^2)$$

[a, b, c, d, f, g, h, i, j, k, l]
- Electron Beam Lithography Point Spread With Offset
 
$$y = a * \exp(-b * x) + c * \exp(-(x - d)^2 / f^2) + g * \exp(-(x - h)^2 / i^2) + j * \exp(-(x - k)^2 / l^2) + \text{Offset}$$

[a, b, c, d, f, g, h, i, j, k, l, Offset]
- Extended Steinhart-Hart (Extended\_Steinhart\_Hart)
  - Extended Steinhart-Hart
 
$$1/T = A + B \ln(R) + C(\ln(R))^2 + D(\ln(R))^3$$

[A, B, C, D]
- Graeme Paterson Electric Motor (GraemePatersonElectricMotor)
  - Graeme Paterson Electric Motor
 
$$y = A * \exp(-b * t) * \cos(\omega * t + \phi) + A2 * \exp(-b2 * t)$$

[A, b, omega, phi, A2, b2]
  - Graeme Paterson Electric Motor With Offset
 
$$y = A * \exp(-b * t) * \cos(\omega * t + \phi) + A2 * \exp(-b2 * t) + \text{Offset}$$

[A, b, omega, phi, A2, b2, Offset]
- Klimpel Kinetics Flotation A (KlimpelFlotationA)
  - Klimpel Kinetics Flotation A
 
$$y = a * (1 - (1 - \exp(-b * x)) / (b * x))$$

[a, b]
  - Klimpel Kinetics Flotation A With Offset
 
$$y = a * (1 - (1 - \exp(-b * x)) / (b * x)) + \text{Offset}$$

[a, b, Offset]
- Maxwell - Wiechert 1 (MaxwellWiechert\_1)
  - Maxwell - Wiechert 1
 
$$y = a1 * \exp(-X / \tau1)$$

[a1, Tau1]
  - Maxwell - Wiechert 1 With Offset
 
$$y = a1 * \exp(-X / \tau1) + \text{Offset}$$

[a1, Tau1, Offset]

- Maxwell - Wiechert 2 (MaxwellWiechert\_2)
  - Maxwell - Wiechert 2
 
$$y = a1 * \exp(-X/Tau1) + a2 * \exp(-X/Tau2)$$

$$[a1, Tau1, a2, Tau2]$$
  - Maxwell - Wiechert 2 With Offset
 
$$y = a1 * \exp(-X/Tau1) + a2 * \exp(-X/Tau2) + \text{Offset}$$

$$[a1, Tau1, a2, Tau2, \text{Offset}]$$
- Maxwell - Wiechert 3 (MaxwellWiechert\_3)
  - Maxwell - Wiechert 3
 
$$y = a1 * \exp(-X/Tau1) + a2 * \exp(-X/Tau2) + a3 * \exp(-X/Tau3)$$

$$[a1, Tau1, a2, Tau2, a3, Tau3]$$
  - Maxwell - Wiechert 3 With Offset
 
$$y = a1 * \exp(-X/Tau1) + a2 * \exp(-X/Tau2) + a3 * \exp(-X/Tau3) + \text{Offset}$$

$$[a1, Tau1, a2, Tau2, a3, Tau3, \text{Offset}]$$
- Maxwell - Wiechert 4 (MaxwellWiechert\_4)
  - Maxwell - Wiechert 4
 
$$y = a1 * \exp(-X/Tau1) + a2 * \exp(-X/Tau2) + a3 * \exp(-X/Tau3) + a4 * \exp(-X/Tau4)$$

$$[a1, Tau1, a2, Tau2, a3, Tau3, a4, Tau4]$$
  - Maxwell - Wiechert 4 With Offset
 
$$y = a1 * \exp(-X/Tau1) + a2 * \exp(-X/Tau2) + a3 * \exp(-X/Tau3) + a4 * \exp(-X/Tau4) + \text{Offset}$$

$$[a1, Tau1, a2, Tau2, a3, Tau3, a4, Tau4, \text{Offset}]$$
- Modified Arps Well Production (ModifiedArpsWellProduction)
  - Modified Arps Well Production
 
$$y = (qi\_x / ((1.0 - b\_x) * Di\_x)) * (1.0 - ((1.0 + b\_x * Di\_x * x)^{(1.0 - 1.0/b\_x)}))$$

$$[qi\_x, b\_x, Di\_x]$$
  - Modified Arps Well Production With Offset
 
$$y = (qi\_x / ((1.0 - b\_x) * Di\_x)) * (1.0 - ((1.0 + b\_x * Di\_x * x)^{(1.0 - 1.0/b\_x)})) + \text{Offset}$$

$$[qi\_x, b\_x, Di\_x, \text{Offset}]$$
- Ramberg-Osgood (Ramberg\_Osgood)
  - Ramberg-Osgood
 
$$y = (Stress/Youngs\_Modulus) + (Stress/K)^{(1.0/n)}$$

[Youngs\_Modulus, K, n]

- Ramberg-Osgood With Offset

$$y = (Stress/Youngs\_Modulus) + (Stress/K)^{(1.0/n)} + Offset$$

[Youngs\_Modulus, K, n, Offset]

- Reciprocal Extended Steinhart-Hart (Reciprocal\_Extended\_Steinhart\_Hart)

- Reciprocal Extended Steinhart-Hart

$$T = 1.0/(A + B\ln(R) + C(\ln(R))^2 + D(\ln(R))^3)$$

[A, B, C, D]

- Reciprocal Extended Steinhart-Hart With Offset

$$T = 1.0/(A + B\ln(R) + C(\ln(R))^2 + D(\ln(R))^3) + Offset$$

[A, B, C, D, Offset]

- Reciprocal Steinhart-Hart (Reciprocal\_Steinhart\_Hart)

- Reciprocal Steinhart-Hart

$$T = 1.0/(A + B\ln(R) + C(\ln(R))^3)$$

[A, B, C]

- Reciprocal Steinhart-Hart With Offset

$$T = 1.0/(A + B\ln(R) + C(\ln(R))^3) + Offset$$

[A, B, C, Offset]

- Sellmeier Optical (SellmeierOptical)

- Sellmeier Optical

$$n^2(x) = 1 + (B1x^2)/(x^2 - C1) + (B2x^2)/(x^2 - C2) + (B3x^2)/(x^2 - C3)$$

[B1, C1, B2, C2, B3, C3]

- Sellmeier Optical With Offset

$$n^2(x) = 1 + (B1x^2)/(x^2 - C1) + (B2x^2)/(x^2 - C2) + (B3x^2)/(x^2 - C3) + Offset$$

[B1, C1, B2, C2, B3, C3, Offset]

- Sellmeier Optical Square Root (SellmeierOpticalSqrt)

- Sellmeier Optical Square Root

$$n = (1 + (B1x^2)/(x^2 - C1) + (B2x^2)/(x^2 - C2) + (B3x^2)/(x^2 - C3))^{0.5}$$

[B1, C1, B2, C2, B3, C3]

- Sellmeier Optical Square Root With Offset

$$n = (1 + (B1x^2)/(x^2 - C1) + (B2x^2)/(x^2 - C2) + (B3x^2)/(x^2 - C3))^{0.5} + Offset$$

[B1, C1, B2, C2, B3, C3, Offset]

- Steinhart-Hart (`Steinhart_Hart`)
  - Steinhart-Hart
$$1/T = A + B \ln(R) + C(\ln(R))^3$$
$$[A, B, C]$$
- VanDeemter Chromatography (`VanDeemterChromatography`)
  - VanDeemter Chromatography
$$y = a + b/x + cx$$
$$[a, b, c]$$

## 3.5 Exponential

- Asymptotic Exponential A (`AsymptoticExponentialA`)
  - Asymptotic Exponential A
$$y = 1.0 - a^x$$
$$[a]$$
  - Asymptotic Exponential A With Offset
$$y = 1.0 - a^x + \text{Offset}$$
$$[a, \text{Offset}]$$
- Asymptotic Exponential A Transform (`AsymptoticExponentialA_Transform`)
  - Asymptotic Exponential A Transform
$$y = 1.0 - a^{bx+c}$$
$$[a, b, c]$$
  - Asymptotic Exponential A Transform With Offset
$$y = 1.0 - a^{bx+c} + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Asymptotic Exponential B (`AsymptoticExponentialB`)
  - Asymptotic Exponential B
$$y = a * (1.0 - \exp(bx))$$
$$[a, b]$$
  - Asymptotic Exponential B With Offset
$$y = a * (1.0 - \exp(bx)) + \text{Offset}$$
$$[a, b, \text{Offset}]$$

- Bruno Torremans Quadruple Exponential (BrunoTorremansQuadrupleExponential)
  - Bruno Torremans Quadruple Exponential
 
$$y = \text{Offset} - R1 * \exp(-x/T1) + R2 * \exp(-x/T2) + R3 * \exp(-x/T3) + R4 * \exp(-x/T4)$$

$$[R1, R2, R3, R4, T1, T2, T3, T4, \text{Offset}]$$
- Double Asymptotic Exponential B (DoubleAsymptoticExponentialB)
  - Double Asymptotic Exponential B
 
$$y = a * (1.0 - \exp(bx)) + c * (1.0 - \exp(dx))$$

$$[a, b, c, d]$$
  - Double Asymptotic Exponential B With Offset
 
$$y = a * (1.0 - \exp(bx)) + c * (1.0 - \exp(dx)) + \text{Offset}$$

$$[a, b, c, d, \text{Offset}]$$
- Double Exponential (DoubleExponential)
  - Double Exponential
 
$$y = a * \exp(bx) + c * \exp(dx)$$

$$[a, b, c, d]$$
  - Double Exponential With Offset
 
$$y = a * \exp(bx) + c * \exp(dx) + \text{Offset}$$

$$[a, b, c, d, \text{Offset}]$$
- Exponential (Exponential)
  - Exponential
 
$$y = a * \exp(bx)$$

$$[a, b]$$
  - Exponential With Offset
 
$$y = a * \exp(bx) + \text{Offset}$$

$$[a, b, \text{Offset}]$$
- Hocket-Sherby (Hocket\_Sherby)
  - Hocket-Sherby
 
$$y = b - (b - a) * \exp(-c * (x^d))$$

$$[a, b, c, d]$$
- Hoerl (Hoerl)
  - Hoerl
 
$$y = x^a * \exp(x)$$

[a]

- Hoerl With Offset

$$y = x^a * \exp(x) + \text{Offset}$$

[a, Offset]

- Hoerl Transform (Hoerl\_Transform)

- Hoerl Transform

$$y = (bx + c)^a * \exp(bx + c)$$

[a, b, c]

- Hoerl Transform With Offset

$$y = (bx + c)^a * \exp(bx + c) + \text{Offset}$$

[a, b, c, Offset]

- Inverted Exponential (InvExponential)

- Inverted Exponential

$$y = a * \exp(b/x)$$

[a, b]

- Inverted Exponential With Offset

$$y = a * \exp(b/x) + \text{Offset}$$

[a, b, Offset]

- Inverted Offset Exponential (InvertedOffsetExponential)

- Inverted Offset Exponential

$$y = a * \exp(b/(x + c))$$

[a, b, c]

- Inverted Offset Exponential With Offset

$$y = a * \exp(b/(x + c)) + \text{Offset}$$

[a, b, c, Offset]

- Jonathan Litz Custom Exponential (JonathanLitzCustomExponential)

- Jonathan Litz Custom Exponential

$$y = a + b * x + c * \exp(-d * x) - c * x * \exp(-d * x)$$

[a, b, c, d]

- Lake Nganoke Samples Exponential (LakeNganokeSamplesExponential)

- Lake Nganoke Samples Exponential

$$y = C / (1.0 + \exp((x - A)/B)) + D * \exp((x - B)/E)$$

[A, B, C, D, E]

- Lake Nganoke Samples Exponential With Offset

$$y = C / (1.0 + \exp((x - A)/B)) + D * \exp((x - B)/E) + \text{Offset}$$

[A, B, C, D, E, Offset]

- Offset Exponential (OffsetExponential)

- Offset Exponential

$$y = a * \exp(bx + c)$$

[a, b, c]

- Offset Exponential With Offset

$$y = a * \exp(bx + c) + \text{Offset}$$

[a, b, c, Offset]

- Scaled Exponential (ScaledExponential)

- Scaled Exponential

$$y = a * \exp(x)$$

[a]

- Scaled Exponential With Offset

$$y = a * \exp(x) + \text{Offset}$$

[a, Offset]

- Shifted Exponential (ShiftedExponential)

- Shifted Exponential

$$y = a * \exp(x + b)$$

[a, b]

- Shifted Exponential With Offset

$$y = a * \exp(x + b) + \text{Offset}$$

[a, b, Offset]

- Simple Exponential (SimpleExponential)

- Simple Exponential

$$y = a^x$$

[a]

- Simple Exponential With Offset

$$y = a^x + \text{Offset}$$

[a, Offset]

- Steve Battison Exponential A (SteveBattisonExponentialA)

- Steve Battison Exponential A

$$y = \exp((a + bx)/(c + dx))$$

[a, b, c, d]

- Steve Battison Exponential A With Offset

$$y = \exp((a + bx)/(c + dx)) + \text{Offset}$$

[a, b, c, d, Offset]

- Steve Battison Exponential B (SteveBattisonExponentialB)

- Steve Battison Exponential B

$$y = a * \exp((b + cx)/(d + fx))$$

[a, b, c, d, f]

- Steve Battison Exponential B With Offset

$$y = a * \exp((b + cx)/(d + fx)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Stirling (Stirling)

- Stirling

$$y = a * (\exp(bx) - 1.0)/b$$

[a, b]

- Stirling With Offset

$$y = a * (\exp(bx) - 1.0)/b + \text{Offset}$$

[a, b, Offset]

- Triple Exponential (TripleExponential)

- Triple Exponential

$$y = a * \exp(bx) + c * \exp(dx) + f * \exp(gx)$$

[a, b, c, d, f, g]

- Triple Exponential With Offset

$$y = a * \exp(bx) + c * \exp(dx) + f * \exp(gx) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- Standard Vapor Pressure (VaporPressure)

- Standard Vapor Pressure

$$y = \exp(a + (b/x) + c * \ln(x))$$

[a, b, c]



- Standard Vapor Pressure With Offset

$$y = \exp(a + (b/x) + c * \ln(x)) + \text{Offset}$$

[a, b, c, Offset]

## 3.6 FourierSeries

- 1 Term (Scaled X) (ScaledX\_1Term)

- 1 Term (Scaled X)

$$y = a0 + a1 * \sin(c1 * x) + b1 * \cos(c1 * x)$$

[a0, a1, b1, c1]

- 1 Term Standard (Standard\_1Term)

- 1 Term Standard

$$y = a0 + a1 * \sin(x) + b1 * \cos(x)$$

[a0, a1, b1]

- 2 Term Standard (Standard\_2Term)

- 2 Term Standard

$$y = a0 + a1 * \sin(x) + b1 * \cos(x) + a2 * \sin(2x) + b2 * \cos(2x)$$

[a0, a1, b1, a2, b2]

- 3 Term Standard (Standard\_3Term)

- 3 Term Standard

$$y = a0 + a1 * \sin(x) + b1 * \cos(x) + a2 * \sin(2x) + b2 * \cos(2x) + a3 * \sin(3x) + b3 * \cos(3x)$$

[a0, a1, b1, a2, b2, a3, b3]

- 4 Term Standard (Standard\_4Term)

- 4 Term Standard

$$y = a0 + a1 * \sin(x) + b1 * \cos(x) + a2 * \sin(2x) + b2 * \cos(2x) + a3 * \sin(3x) + b3 * \cos(3x) + a4 * \sin(4x) + b4 * \cos(4x)$$

[a0, a1, b1, a2, b2, a3, b3, a4, b4]

## 3.7 LegendrePolynomial

- Legendre Polynomial G - Eighth Degree (EighthDegreeLegendrePolynomial)
  - Legendre Polynomial G - Eighth Degree
 
$$y = a + bx + cP_2 + dP_3 + fP_4 + gP_5 + hP_6 + iP_7 + jP_8$$

$$[a, b, c, d, f, g, h, i, j]$$
- Legendre Polynomial D - Fifth Degree (FifthDegreeLegendrePolynomial)
  - Legendre Polynomial D - Fifth Degree
 
$$y = a + bx + cP_2 + dP_3 + fP_4 + gP_5$$

$$[a, b, c, d, f, g]$$
- Legendre Polynomial C - Fourth Degree (FourthDegreeLegendrePolynomial)
  - Legendre Polynomial C - Fourth Degree
 
$$y = a + bx + cP_2 + dP_3 + fP_4$$

$$[a, b, c, d, f]$$
- Gamma Ray Angular Distribution (degrees) A (GammaRayAngularDistributionDegreesA)
  - Gamma Ray Angular Distribution (degrees) A
 
$$y = A0 + A2 * P_2(\cos(\theta))$$

$$[A0, A2]$$
- Gamma Ray Angular Distribution (degrees) B (GammaRayAngularDistributionDegreesB)
  - Gamma Ray Angular Distribution (degrees) B
 
$$y = A0 + A2 * P_2(\cos(\theta)) + A4 * P_4(\cos(\theta))$$

$$[A0, A2, A4]$$
- Gamma Ray Angular Distribution (radians) A (GammaRayAngularDistributionRadiansA)
  - Gamma Ray Angular Distribution (radians) A
 
$$y = A0 + A2 * P_2(\cos(\theta))$$

$$[A0, A2]$$
- Gamma Ray Angular Distribution (radians) B (GammaRayAngularDistributionRadiansB)
  - Gamma Ray Angular Distribution (radians) B
 
$$y = A0 + A2 * P_2(\cos(\theta)) + A4 * P_4(\cos(\theta))$$

$$[A0, A2, A4]$$
- Legendre Polynomial H - Ninth Degree (NinthDegreeLegendrePolynomial)

- Legendre Polynomial H - Ninth Degree

$$y = a + bx + cP_2 + dP_3 + fP_4 + gP_5 + hP_6 + iP_7 + jP_8 + kP_9$$

[a, b, c, d, f, g, h, i, j, k]

- Legendre Polynomial A - Second Degree (SecondDegreeLegendrePolynomial)

- Legendre Polynomial A - Second Degree

$$y = a + bx + cP_2$$

[a, b, c]

- Legendre Polynomial F - Seventh Degree (SeventhDegreeLegendrePolynomial)

- Legendre Polynomial F - Seventh Degree

$$y = a + bx + cP_2 + dP_3 + fP_4 + gP_5 + hP_6 + iP_7$$

[a, b, c, d, f, g, h, i]

- Legendre Polynomial E - Sixth Degree (SixthDegreeLegendrePolynomial)

- Legendre Polynomial E - Sixth Degree

$$y = a + bx + cP_2 + dP_3 + fP_4 + gP_5 + hP_6$$

[a, b, c, d, f, g, h]

- Legendre Polynomial I - Tenth Degree (TenthDegreeLegendrePolynomial)

- Legendre Polynomial I - Tenth Degree

$$y = a + bx + cP_2 + dP_3 + fP_4 + gP_5 + hP_6 + iP_7 + jP_8 + kP_9 + mP_{10}$$

[a, b, c, d, f, g, h, i, j, k, m]

- Legendre Polynomial B - Third Degree (ThirdDegreeLegendrePolynomial)

- Legendre Polynomial B - Third Degree

$$y = a + bx + cP_2 + dP_3$$

[a, b, c, d]

## 3.8 Logarithmic

- Base 10 Logarithmic (Base10Logarithmic)

- Base 10 Logarithmic

$$y = a + b * \log_{10}(x)$$

[a, b]

- Bradley (Bradley)

- Bradley

$$y = a * \ln(-b * \ln(x))$$

[a, b]

- Bradley With Offset

$$y = a * \ln(-b * \ln(x)) + \text{Offset}$$

[a, b, Offset]

- Bradley Transform (BradleyTransform)

- Bradley Transform

$$y = a * \ln(-b * \ln(cx + d))$$

[a, b, c, d]

- Bradley Transform With Offset

$$y = a * \ln(-b * \ln(cx + d)) + \text{Offset}$$

[a, b, c, d, Offset]

- Crystal Resonator Ageing MIL-PRF-55310E (CrystalResonatorAgeing)

- Crystal Resonator Ageing MIL-PRF-55310E

$$y = A(\ln(Bt + 1)) + f0$$

[A, B, f0]

- Cubic Logarithmic (CubicLogarithmic)

- Cubic Logarithmic

$$y = a + b * \ln(x) + c * \ln(x)^2 + d * \ln(x)^3$$

[a, b, c, d]

- Cubic Logarithmic Scaled (CubicLogarithmicScaled)

- Cubic Logarithmic Scaled

$$y = a + b * \ln(f * x) + c * \ln(f * x)^2 + d * \ln(f * x)^3$$

[a, b, c, d, f]

- Cubic Logarithmic Transform (CubicLogarithmicTransform)

- Cubic Logarithmic Transform

$$y = a + b * \ln(f * x + g) + c * \ln(f * x + g)^2 + d * \ln(f * x + g)^3$$

[a, b, c, d, f, g]

- Linear Logarithmic (LinearLogarithmic)

- Linear Logarithmic

$$y = a + b * \ln(x)$$

[a, b]

- Linear Logarithmic Scaled (LinearLogarithmicScaled)

- Linear Logarithmic Scaled

$$y = a + b * \ln(cx)$$

[a, b, c]

- Linear Logarithmic Shifted (LinearLogarithmicShifted)

- Linear Logarithmic Shifted

$$y = a + b * \ln(c + x)$$

[a, b, c]

- Linear Logarithmic Transform (LinearLogarithmicTransform)

- Linear Logarithmic Transform

$$y = a + b * \ln(cx + d)$$

[a, b, c, d]

- Quadratic Logarithmic (QuadraticLogarithmic)

- Quadratic Logarithmic

$$y = a + b * \ln(x) + c * \ln(x)^2$$

[a, b, c]

- Quadratic Logarithmic Scaled (QuadraticLogarithmicScaled)

- Quadratic Logarithmic Scaled

$$y = a + b * \ln(dx) + c * \ln(dx)^2$$

[a, b, c, d]

- Quadratic Logarithmic Transform (QuadraticLogarithmicTransform)

- Quadratic Logarithmic Transform

$$y = a + b * \ln(dx + f) + c * \ln(dx + f)^2$$

[a, b, c, d, f]

- Quartic Logarithmic (QuarticLogarithmic)

- Quartic Logarithmic

$$y = a + b * \ln(x) + c * \ln(x)^2 + d * \ln(x)^3 + f * \ln(x)^4$$

[a, b, c, d, f]

- Quartic Logarithmic Scaled (QuarticLogarithmicScaled)

- Quartic Logarithmic Scaled

$$y = a + b * \ln(h * x) + c * \ln(h * x)^2 + d * \ln(h * x)^3 + f * \ln(h * x)^4$$

[a, b, c, d, f, g]

- Quartic Logarithmic Transform (QuarticLogarithmicTransform)

- Quartic Logarithmic Transform

$$y = a + b * \ln(g * x + h) + c * \ln(g * x + h)^2 + d * \ln(g * x + h)^3 + f * \ln(g * x + h)^4$$

[a, b, c, d, f, g, h]

- Quintic Logarithmic (QuinticLogarithmic)

- Quintic Logarithmic

$$y = a + b * \ln(x) + c * \ln(x)^2 + d * \ln(x)^3 + f * \ln(x)^4 + g * \ln(x)^5$$

[a, b, c, d, f, g]

- Quintic Logarithmic Scaled (QuinticLogarithmicScaled)

- Quintic Logarithmic Scaled

$$y = a + b * \ln(h * x) + c * \ln(h * x)^2 + d * \ln(h * x)^3 + f * \ln(h * x)^4 + g * \ln(h * x)^5$$

[a, b, c, d, f, g, h]

- Quintic Logarithmic Transform (QuinticLogarithmicTransform)

- Quintic Logarithmic Transform

$$y = a + b * \ln(h * x + i) + c * \ln(h * x + i)^2 + d * \ln(h * x + i)^3 + f * \ln(h * x + i)^4 + g * \ln(h * x + i)^5$$

[a, b, c, d, f, g, h, i]

## 3.9 Miscellaneous

- Arrhenius Rate Constant Law (ArrheniusRateConstantLaw)

- Arrhenius Rate Constant Law

$$y = a * \exp(-b/x)$$

[a, b]

- Arrhenius Rate Constant Law With Offset

$$y = a * \exp(-b/x) + \text{Offset}$$

[a, b, Offset]

- Arrhenius Rate Constant Law Stretched (ArrheniusRateConstantLawStretched)

- Arrhenius Rate Constant Law Stretched

$$y = a * \exp(-\text{pow}(b/x, c))$$

[a, b, c]

- Arrhenius Rate Constant Law Stretched With Offset

$$y = a * \exp(-\text{pow}(b/x, c)) + \text{Offset}$$

[a, b, c, Offset]

- Bleasdale-Nelder (Bleasdale\_Nelder)

- Bleasdale-Nelder

$$y = (a + bx)^{-c}$$

[a, b, c]

- Bleasdale-Nelder With Offset

$$y = (a + bx)^{-c} + \text{Offset}$$

[a, b, c, Offset]

- Catenary (Catenary)

- Catenary

$$y = a * \cosh(x/a)$$

[a]

- Catenary With Offset

$$y = a * \cosh(x/a) + \text{Offset}$$

[a, Offset]

- Catenary Transform (CatenaryTransform)

- Catenary Transform

$$y = a * \cosh((bx + c)/a)$$

[a, b, c]

- Catenary Transform With Offset

$$y = a * \cosh((bx + c)/a) + \text{Offset}$$

[a, b, c, Offset]

- Cissoid Of Diocles (CissoidOfDiocles)

- Cissoid Of Diocles

$$y = a(x^3/(2b - x))^{0.5}$$

[a, b]

- Cissoid Of Diocles With Offset

$$y = a(x^3/(2b - x))^{0.5} + \text{Offset}$$

[a, b, Offset]

- Cissoid Of Diocles Transform (CissoidOfDioclesTransform)

- Cissoid Of Diocles Transform

$$y = a((x * c - d)^3 / (2b - (x * c - d)))^{0.5}$$

[a, b, c, d]

- Cissoid Of Diocles Transform With Offset

$$y = a((x * c - d)^3 / (2b - (x * c - d)))^{0.5} + \text{Offset}$$

[a, b, c, d, Offset]

- Combined Power And Exponential (CombinedPowerAndExponential)

- Combined Power And Exponential

$$y = ax^b * \exp(cx)$$

[a, b, c]

- Combined Power And Exponential With Offset

$$y = ax^b * \exp(cx) + \text{Offset}$$

[a, b, c, Offset]

- David Rodbard NIH (DavidRodbardNIH)

- David Rodbard NIH

$$y = d + (a - d) / (1.0 + (x/c)^b)$$

[a, b, c, d]

- Double Langmuir Probe Characteristic (DoubleLangmuirProbeCharacteristic)

- Double Langmuir Probe Characteristic

$$y = a * \tanh(bx + c)$$

[a, b, c]

- Double Langmuir Probe Characteristic With Offset

$$y = a * \tanh(bx + c) + \text{Offset}$$

[a, b, c, Offset]

- Double Rectangular Hyperbola A (DoubleRectangularHyperbolaA)

- Double Rectangular Hyperbola A

$$y = ax / (b + x) + cx / (d + x)$$

[a, b, c, d]

- Double Rectangular Hyperbola A With Offset

$$y = ax / (b + x) + cx / (d + x) + \text{Offset}$$

[a, b, c, d, Offset]

- Double Rectangular Hyperbola B (DoubleRectangularHyperbolaB)



- Double Rectangular Hyperbola B
$$y = ax/(b + x) + cx/(d + x) + fx$$

[a, b, c, d, f]
- Double Rectangular Hyperbola B With Offset
$$y = ax/(b + x) + cx/(d + x) + fx + \text{Offset}$$

[a, b, c, d, f, Offset]
- Figure Eight Curve (FigureEight)
  - Figure Eight Curve
$$y = a(x^2 - (x^4/b^2))^{0.5}$$

[a, b]
  - Figure Eight Curve With Offset
$$y = a(x^2 - (x^4/b^2))^{0.5} + \text{Offset}$$

[a, b, Offset]
- Figure Eight Curve Transform (FigureEightTransform)
  - Figure Eight Curve Transform
$$y = a((cx + d)^2 - ((cx + d)^4/b^2))^{0.5}$$

[a, b, c, d]
  - Figure Eight Curve Transform With Offset
$$y = a((cx + d)^2 - ((cx + d)^4/b^2))^{0.5} + \text{Offset}$$

[a, b, c, d, Offset]
- Gunary (Gunary)
  - Gunary
$$y = x/(a + bx + cx^{0.5})$$

[a, b, c]
  - Gunary With Offset
$$y = x/(a + bx + cx^{0.5}) + \text{Offset}$$

[a, b, c, Offset]
- Hyperbola A Modified (HyperbolaA\_Modified)
  - Hyperbola A Modified
$$y = ax/(1 + bx)$$

[a, b]

- Hyperbola A Modified With Offset
$$y = ax/(1 + bx) + \text{Offset}$$

[a, b, Offset]
- Hyperbola B Modified (HyperbolaB\_Modified)
  - Hyperbola B Modified
$$y = x/(a + bx)$$

[a, b]
  - Hyperbola B Modified With Offset
$$y = x/(a + bx) + \text{Offset}$$

[a, b, Offset]
- Hyperbolic Decay (HyperbolicDecay)
  - Hyperbolic Decay
$$y = ab/(b + x)$$

[a, b]
  - Hyperbolic Decay With Offset
$$y = ab/(b + x) + \text{Offset}$$

[a, b, Offset]
- Karplus NMR Spectroscopy (KarplusNMRSpectroscopy)
  - Karplus NMR Spectroscopy
$$J(da) = A\cos^2(da) + B\cos(da) + C$$

[A, B, C]
- Karplus NMR Spectroscopy Scaled (KarplusNMRSpectroscopyScaled)
  - Karplus NMR Spectroscopy Scaled
$$J(da) = A\cos^2(s * da) + B\cos(s * da) + C$$

[A, B, C, s]
- Lame's Cubic (LamesCubic)
  - Lame's Cubic
$$y = (a^3 - x^3)^{1/3}$$

[a]
  - Lame's Cubic With Offset
$$y = (a^3 - x^3)^{1/3} + \text{Offset}$$

[a, Offset]

- **Lame's Cubic Transform (LamesCubicTransform)**

- Lame's Cubic Transform

$$y = (a^3 - (bx + c)^3)^{1/3}$$

[a, b, c]

- Lame's Cubic Transform With Offset

$$y = (a^3 - (bx + c)^3)^{1/3} + \text{Offset}$$

[a, b, c, Offset]

- **Miscellaneous 1 (Misc1)**

- Miscellaneous 1

$$y = 1.0 + a(1.0 - \exp(bx))$$

[a, b]

- Miscellaneous 1 With Offset

$$y = 1.0 + a(1.0 - \exp(bx)) + \text{Offset}$$

[a, b, Offset]

- **Morse Potential (MorsePotential)**

- Morse Potential

$$V = D * (\exp(-2 * m * (x - u)) - 2 * \exp(-m * (x - u))) + offset$$

[D, m, u, offset]

- **Nelson-Siegel (NelsonSiegel)**

- Nelson-Siegel

$$y(m) = B0 + B1 * ((1 - \exp(-m/t))/(m/t)) + B2 * (((1 - \exp(-m/t))/(m/t)) - \exp(-m/t))$$

[B0, B1, B2, t]

- **Nelson-Siegel-Svensson (NelsonSiegelSvensson)**

- Nelson-Siegel-Svensson

$$y(m) = B0 + B1 * ((1 - \exp(-m/t))/(m/t)) + B2 * (((1 - \exp(-m/t))/(m/t)) - \exp(-m/t)) + B3 * (((1 - \exp(-m/t2))/(m/t2)) - \exp(-m/t2))$$

[B0, B1, B2, B3, t, t2]

- **Niele's Semi-cubical Parabola (NielesSemicubicalParabola)**

- Niele's Semi-cubical Parabola

$$y = (ax^2)^{1.0/3.0}$$

[a]

- Niele’s Semi-cubical Parabola With Offset

$$y = (ax^2)^{1.0/3.0} + \text{Offset}$$

[a, Offset]

- Niele’s Semi-cubical Parabola Transform (NielesSemicubicalParabolaTransform)

- Niele’s Semi-cubical Parabola Transform

$$y = (a(b * x + c)^2)^{1.0/3.0}$$

[a, b, c]

- Niele’s Semi-cubical Parabola Transform With Offset

$$y = (a(b * x + c)^2)^{1.0/3.0} + \text{Offset}$$

[a, b, c, Offset]

- Pareto A (ParetoA)

- Pareto A

$$y = 1 - x^{-a}$$

[a]

- Pareto A With Offset

$$y = 1 - x^{-a} + \text{Offset}$$

[a, Offset]

- Pareto B (ParetoB)

- Pareto B

$$y = a(1 - x^{-b})$$

[a, b]

- Pareto B With Offset

$$y = a(1 - x^{-b}) + \text{Offset}$$

[a, b, Offset]

- Pareto C (ParetoC)

- Pareto C

$$y = 1.0 - (1.0/(1 + ax)^b)$$

[a, b]

- Pareto C With Offset

$$y = 1.0 - (1.0/(1 + ax)^b) + \text{Offset}$$

[a, b, Offset]

- Pareto D (ParetoD)

- Pareto D
 
$$y = 1.0 - (1.0/x^a)$$
 [a]
- Pareto D With Offset
 
$$y = 1.0 - (1.0/x^a) + \text{Offset}$$
 [a, Offset]
- Pear-shaped Quartic (PearShapedQuartic)
  - Pear-shaped Quartic
 
$$y = a(x^3(b - x)/c^2)^{0.5}$$
 [a, b, c]
  - Pear-shaped Quartic With Offset
 
$$y = a(x^3(b - x)/c^2)^{0.5} + \text{Offset}$$
 [a, b, c, Offset]
- Pear-shaped Quartic Transform (PearShapedQuarticTransform)
  - Pear-shaped Quartic Transform
 
$$y = a((dx + f)^3(b - (dx + f))/c^2)^{0.5}$$
 [a, b, c, d, f]
  - Pear-shaped Quartic Transform With Offset
 
$$y = a((dx + f)^3(b - (dx + f))/c^2)^{0.5} + \text{Offset}$$
 [a, b, c, d, f, Offset]
- Physicist Peter’s Custom Equation (PhysicistPeterCustomEquation)
  - Physicist Peter’s Custom Equation
 
$$y = A + B * (X - C) + 0.5 * G * (X - C)^2$$
 [A, B, C, G]
- Physicist Peter’s Pendulum Traversal (PhysicistPeterPendulumTraversal)
  - Physicist Peter’s Pendulum Traversal
 
$$y = a * (x + b)^{1/2}$$
 [a, b]
  - Physicist Peter’s Pendulum Traversal With Offset
 
$$y = a * (x + b)^{1/2} + \text{Offset}$$
 [a, b, Offset]
- Polytrope (Polytrope)

- Polytrope
$$y = a/x^b$$

[a, b]
- Polytrope With Offset
$$y = a/x^b + \text{Offset}$$

[a, b, Offset]
- Polytrope Transform (PolytropeTransform)
  - Polytrope Transform
$$y = a/(cx + d)^b$$

[a, b, c, d]
  - Polytrope Transform With Offset
$$y = a/(cx + d)^b + \text{Offset}$$

[a, b, c, d, Offset]
- Pursuit Curve (PursuitCurve)
  - Pursuit Curve
$$y = ax^2 - \log(x)$$

[a]
  - Pursuit Curve With Offset
$$y = ax^2 - \log(x) + \text{Offset}$$

[a, Offset]
- Pursuit Curve Transform (PursuitCurve\_Transform)
  - Pursuit Curve Transform
$$y = a(bx + c)^2 - \log(bx + c)$$

[a, b, c]
  - Pursuit Curve Transform With Offset
$$y = a(bx + c)^2 - \log(bx + c) + \text{Offset}$$

[a, b, c, Offset]
- Rectangular Hyperbola A (RectangularHyperbolaA)
  - Rectangular Hyperbola A
$$y = ax/(b + x)$$

[a, b]

- Rectangular Hyperbola A With Offset
 
$$y = ax/(b + x) + \text{Offset}$$
 [a, b, Offset]
- Rectangular Hyperbola B (RectangularHyperbolaB)
  - Rectangular Hyperbola B
 
$$y = ax/(b + x) + cx$$
 [a, b, c]
  - Rectangular Hyperbola B With Offset
 
$$y = ax/(b + x) + cx + \text{Offset}$$
 [a, b, c, Offset]
- Serpentine (Serpentine)
  - Serpentine
 
$$y = ax/(1.0 + bx^2)$$
 [a, b]
  - Serpentine With Offset
 
$$y = ax/(1.0 + bx^2) + \text{Offset}$$
 [a, b, Offset]
- Shifted Reciprocal (ShiftedReciprocal)
  - Shifted Reciprocal
 
$$y = 1.0/(a - x)$$
 [a]
  - Shifted Reciprocal With Offset
 
$$y = 1.0/(a - x) + \text{Offset}$$
 [a, Offset]
- Square Modified (Square\_Modified)
  - Square Modified
 
$$y = x^2 - ax$$
 [a]
  - Square Modified With Offset
 
$$y = x^2 - ax + \text{Offset}$$
 [a, Offset]
- Square Modified Transform (Square\_Modified\_Transform)

- Square Modified Transform

$$y = (bx + c)^2 - a(bx + c)$$

[a, b, c]

- Square Modified Transform With Offset

$$y = (bx + c)^2 - a(bx + c) + \text{Offset}$$

[a, b, c, Offset]

- Timothy Strobel's Custom Equation (TimothyStrobelCustomEquation)

- Timothy Strobel's Custom Equation

$$y = (A - B * X^C) * (1 - (0.5 + (\arctan((X - D)/E))/\pi)) + (F - G * X^H) * (0.5 + (\arctan((X - D)/E))/\pi)$$

[A, B, C, D, E, F, G, H]

- Timothy Strobel's Custom Equation With Offset

$$y = (A - B * X^C) * (1 - (0.5 + (\arctan((X - D)/E))/\pi)) + (F - G * X^H) * (0.5 + (\arctan((X - D)/E))/\pi) + \text{Offset}$$

[A, B, C, D, E, F, G, H, Offset]

- Transition State Rate Constant Law (TransitionStateRateConstantLaw)

- Transition State Rate Constant Law

$$y = ax^b * \exp(-c/x)$$

[a, b, c]

- Transition State Rate Constant Law With Offset

$$y = ax^b * \exp(-c/x) + \text{Offset}$$

[a, b, c, Offset]

- Trisectrix Of Maclaurin (TrisectrixOfMaclaurin)

- Trisectrix Of Maclaurin

$$y = a(x^2(3b - x)/(b + x))^{0.5}$$

[a, b]

- Trisectrix Of Maclaurin With Offset

$$y = a(x^2(3b - x)/(b + x))^{0.5} + \text{Offset}$$

[a, b, Offset]

- Trisectrix Of Maclaurin Transform (TrisectrixOfMaclaurinTransform)

- Trisectrix Of Maclaurin Transform

$$y = a((cx + d)^2(3b - (cx + d))/(b + (cx + d)))^{0.5}$$

[a, b, c, d]



- Trisectrix Of Maclaurin Transform With Offset

$$y = a((cx + d)^2(3b - (cx + d))/(b + (cx + d)))^{0.5} + \text{Offset}$$

[a, b, c, d, Offset]

- Witch Of Maria Agnesi A (WitchOfAgnesiA)

- Witch Of Maria Agnesi A

$$y = 8a^3/(x^2 + 4a^2)$$

[a]

- Witch Of Maria Agnesi A With Offset

$$y = 8a^3/(x^2 + 4a^2) + \text{Offset}$$

[a, Offset]

- Witch Of Maria Agnesi B (WitchOfAgnesiB)

- Witch Of Maria Agnesi B

$$y = a^3/(x^2 + a^2)$$

[a]

- Witch Of Maria Agnesi B With Offset

$$y = a^3/(x^2 + a^2) + \text{Offset}$$

[a, Offset]

- Witch Of Maria Agnesi C (WitchOfAgnesiC)

- Witch Of Maria Agnesi C

$$y = a^3/((x * b + c)^2 + a^2)$$

[a, b, c]

- Witch Of Maria Agnesi C With Offset

$$y = a^3/((x * b + c)^2 + a^2) + \text{Offset}$$

[a, b, c, Offset]

## 3.10 NIST

- NIST Bennett5 (NIST\_Bennett5)

- NIST Bennett5

$$y = a * (b + x)^{-1/c}$$

[a, b, c]

- NIST Bennett5 With Offset

$$y = a * (b + x)^{-1/c} + \text{Offset}$$

[a, b, c, Offset]

- NIST BoxBOD (NIST\_BoxBOD)

- NIST BoxBOD

$$y = a * (1.0 - \exp(-b * x))$$

[a, b]

- NIST BoxBOD With Offset

$$y = a * (1.0 - \exp(-b * x)) + \text{Offset}$$

[a, b, Offset]

- NIST Chwirut (NIST\_Chwirut)

- NIST Chwirut

$$y = \exp(-a * x) / (b + c * x)$$

[a, b, c]

- NIST Chwirut With Offset

$$y = \exp(-a * x) / (b + c * x) + \text{Offset}$$

[a, b, c, Offset]

- NIST DanWood (NIST\_DanWood)

- NIST DanWood

$$y = a * x^b$$

[a, b]

- NIST DanWood With Offset

$$y = a * x^b + \text{Offset}$$

[a, b, Offset]

- NIST ENSO (NIST\_ENSO)

- NIST ENSO

$$y = a + b * \cos(2 * \pi * x / 12) + c * \sin(2 * \pi * x / 12) + f * \cos(2 * \pi * x / d) + g * \sin(2 * \pi * x / d) + i * \cos(2 * \pi * x / h) + j * \sin(2 * \pi * x / h)$$

[a, b, c, d, f, g, h, i, j]

- NIST Eckerle4 (NIST\_Eckerle4)

- NIST Eckerle4

$$y = (a/b) * \exp(-0.5 * ((x - c)/b)^2)$$

[a, b, c]

- NIST Eckerle4 With Offset

$$y = (a/b) * \exp(-0.5 * ((x - c)/b)^2) + \text{Offset}$$

[a, b, c, Offset]

- NIST Gauss (NIST\_Gauss)

- NIST Gauss

$$y = a * \exp(-b * x) + c * \exp(-(x - d)^2 / f^2) + g * \exp(-(x - h)^2 / i^2)$$

[a, b, c, d, f, g, h, i]

- NIST Gauss With Offset

$$y = a * \exp(-b * x) + c * \exp(-(x - d)^2 / f^2) + g * \exp(-(x - h)^2 / i^2) + \text{Offset}$$

[a, b, c, d, f, g, h, i, Offset]

- NIST Hahn (NIST\_Hahn)

- NIST Hahn

$$y = (a + b * x + c * x^2 + d * x^3) / (1.0 + f * x + g * x^2 + h * x^3)$$

[a, b, c, d, f, g, h]

- NIST Hahn With Offset

$$y = (a + b * x + c * x^2 + d * x^3) / (1.0 + f * x + g * x^2 + h * x^3) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- NIST Kirby (NIST\_Kirby)

- NIST Kirby

$$y = (a + b * x + c * x^2) / (1.0 + d * x + f * x^2)$$

[a, b, c, d, f]

- NIST Kirby With Offset

$$y = (a + b * x + c * x^2) / (1.0 + d * x + f * x^2) + \text{Offset}$$

[a, b, c, d, f, Offset]

- NIST Lanczos (NIST\_Lanczos)

- NIST Lanczos

$$y = a * \exp(-b * x) + c * \exp(-d * x) + f * \exp(-g * x)$$

[a, b, c, d, f, g]

- NIST Lanczos With Offset

$$y = a * \exp(-b * x) + c * \exp(-d * x) + f * \exp(-g * x) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- NIST MGH09 (NIST\_MGH09)
  - NIST MGH09
$$y = a * (x^2 + b * x) / (x^2 + c * x + d)$$

[a, b, c, d]
  - NIST MGH09 With Offset
$$y = a * (x^2 + b * x) / (x^2 + c * x + d) + \text{Offset}$$

[a, b, c, d, Offset]
- NIST MGH10 (NIST\_MGH10)
  - NIST MGH10
$$y = a * \exp(b / (x + c))$$

[a, b, c]
  - NIST MGH10 With Offset
$$y = a * \exp(b / (x + c)) + \text{Offset}$$

[a, b, c, Offset]
- NIST MGH17 (NIST\_MGH17)
  - NIST MGH17
$$y = a + b * \exp(-x * d) + c * \exp(-x * f)$$

[a, b, c, d, f]
- NIST Misra1a (NIST\_Misra1a)
  - NIST Misra1a
$$y = a * (1.0 - \exp(-b * x))$$

[a, b]
  - NIST Misra1a With Offset
$$y = a * (1.0 - \exp(-b * x)) + \text{Offset}$$

[a, b, Offset]
- NIST Misra1b (NIST\_Misra1b)
  - NIST Misra1b
$$y = a * (1.0 - (1.0 + b * x / 2.0)^{-2.0})$$

[a, b]
  - NIST Misra1b With Offset
$$y = a * (1.0 - (1.0 + b * x / 2.0)^{-2.0}) + \text{Offset}$$

[a, b, Offset]

- NIST Misra1c (NIST\_Misra1c)
  - NIST Misra1c
$$y = a * (1.0 - (1.0 + 2.0 * b * x)^{-0.5})$$

[a, b]
  - NIST Misra1c With Offset
$$y = a * (1.0 - (1.0 + 2.0 * b * x)^{-0.5}) + \text{Offset}$$

[a, b, Offset]
- NIST Misra1d (NIST\_Misra1d)
  - NIST Misra1d
$$y = a * b * x * (1.0 + b * x)^{-1.0}$$

[a, b]
  - NIST Misra1d With Offset
$$y = a * b * x * (1.0 + b * x)^{-1.0} + \text{Offset}$$

[a, b, Offset]
- NIST Rat42 (NIST\_Rat42)
  - NIST Rat42
$$y = a / (1.0 + \exp(b - c * x))$$

[a, b, c]
  - NIST Rat42 With Offset
$$y = a / (1.0 + \exp(b - c * x)) + \text{Offset}$$

[a, b, c, Offset]
- NIST Rat43 (NIST\_Rat43)
  - NIST Rat43
$$y = a / ((1.0 + \exp(b - c * x))^{(1.0/d)})$$

[a, b, c, d]
  - NIST Rat43 With Offset
$$y = a / ((1.0 + \exp(b - c * x))^{(1.0/d)}) + \text{Offset}$$

[a, b, c, d, Offset]
- NIST Roszman (NIST\_Roszman)
  - NIST Roszman
$$y = a - bx - (\arctan(c/(x - d))/\pi)$$

[a, b, c, d]

- NIST Thurber (NIST\_Thurber)

- NIST Thurber

$$y = (a + bx + cx^2 + dx^3)/(1.0 + fx + gx^2 + hx^3)$$

[a, b, c, d, f, g, h]

- NIST Thurber With Offset

$$y = (a + bx + cx^2 + dx^3)/(1.0 + fx + gx^2 + hx^3) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

### 3.11 Optical

- CAUCHY (Cauchy)

- CAUCHY

$$n = A + B/x^2 + C/x^4$$

[A, B, C]

- CONRADY1 (Conrady1)

- CONRADY1

$$n = A + B/x + C/x^{3.5}$$

[A, B, C]

- CONRADY2 (Conrady2)

- CONRADY2

$$n = A + B/x^2 + C/x^{3.5}$$

[A, B, C]

- HARTMANN1 (Hartmann1)

- HARTMANN1

$$n = A + B/(C - x)$$

[A, B, C]

- HARTMANN2 (Hartmann2)

- HARTMANN2

$$n = A + B/(C - x)^2$$

[A, B, C]

- HARTMANN3a (Hartmann3a)

- HARTMANN3a
$$n = A + B/(C - x)^{1.2}$$

[A, B, C]
- HARTMANN3b (Hartmann3b)
  - HARTMANN3b
$$n = A/(x - B)^{1.2}$$

[A, B]
  - HARTMANN3b With Offset
$$n = A/(x - B)^{1.2} + \text{Offset}$$

[A, B, Offset]
- HARTMANN4 (Hartmann4)
  - HARTMANN4
$$n = A + B/(C - x) + D/(E - x)$$

[A, B, C, D, E]
- HERZBRGR2X2 (Herzberger2X2)
  - HERZBRGR2X2
$$n = A + Bx^2 + C/(x^2 - 0.028) + D/(x^2 - 0.028)^2$$

[A, B, C, D]
- HERZBRGR3X2 (Herzberger3X2)
  - HERZBRGR3X2
$$n = A + Bx^2 + Cx^4 + D/(x^2 - 0.028) + E/(x^2 - 0.028)^2$$

[A, B, C, D, E]
- HERZBRGR3X3 (Herzberger3X3)
  - HERZBRGR3X3
$$n = A + Bx^2 + Cx^4 + D/(x^2 - 0.028) + E/(x^2 - 0.028)^2 + F/(x^2 - 0.028)^4$$

[A, B, C, D, E, F]
- HERZBRGR4X2 (Herzberger4X2)
  - HERZBRGR4X2
$$n = A + Bx^2 + Cx^4 + Dx^6 + E/(x^2 - 0.028) + F/(x^2 - 0.028)^2$$

[A, B, C, D, E, F]
- HERZBRGR5X2 (Herzberger5X2)

- HERZBRGR5X2

$$n = A + Bx^2 + Cx^4 + Dx^6 + Ex^8 + F/(x^2 - 0.028) + G/(x^2 - 0.028)^2$$

[A, B, C, D, E, F, G]

- HERZBRGRJK (HerzbergerJK)

- HERZBRGRJK

$$n = A + Bx^2 + Cx^4 + Dx^6 + E/(x^2 - J) + F/(x^2 - K)^2$$

[A, B, C, D, E, F, J, K]

- HoO1 (Ho01)

- HoO1

$$n^2 = A + Bx^2 + C/(x^2 - D^2)$$

[A, B, C, D]

- HoO2 (Ho02)

- HoO2

$$n^2 = A + Bx^2 + Cx^2/(x^2 - D^2)$$

[A, B, C, D]

- KINGSLAKE1 (Kingslake1)

- KINGSLAKE1

$$n^2 = A + B/(x^2 - C^2) + D/(x^2 - E^2)$$

[A, B, C, D, E]

- KINGSLAKE2 (Kingslake2)

- KINGSLAKE2

$$n^2 = A + B/(x^2 - C^2) + D/(x^2 - E^2) + F/(x^2 - G^2)$$

[A, B, C, D, E, F, G]

- MISC01 (Misc01)

- MISC01

$$n^2 = A + B/(x^2 - C^2)$$

[A, B, C]

- MISC02 (Misc02)

- MISC02

$$n^2 = A + Bx^2 + C/(x^2 - D^2)$$

[A, B, C, D]

- MISC03 (Misc03)



- MISC03

$$n^2 = A + B/x^2 + Cx^2/(x^2 - D^2)$$

[A, B, C, D]

- MISC04 (Misc04)

- MISC04

$$n^2 = A + Bx^2 + Cx^4 + D/x^2 + Ex^2/(x^2 - F + (Gx^2/(x^2 - F)))$$

[A, B, C, D, E, F, G]

- SCHOTT2X3 (Schott2X3)

- SCHOTT2X3

$$n^2 = A + Bx^2 + C/x^2 + D/x^4 + E/x^6$$

[A, B, C, D, E]

- SCHOTT2X4 (Schott2X4)

- SCHOTT2X4

$$n^2 = A + Bx^2 + C/x^2 + D/x^4 + E/x^6 + F/x^8$$

[A, B, C, D, E, F]

- SCHOTT2X5 (Schott2X5)

- SCHOTT2X5

$$n^2 = A + Bx^2 + C/x^2 + D/x^4 + E/x^6 + F/x^8 + G/x^{10}$$

[A, B, C, D, E, F, G]

- SCHOTT2X6 (Schott2X6)

- SCHOTT2X6

$$n^2 = A + Bx^2 + C/x^2 + D/x^4 + E/x^6 + F/x^8 + G/x^{10} + H/x^{12}$$

[A, B, C, D, E, F, G, H]

- SCHOTT3X3 (Schott3X3)

- SCHOTT3X3

$$n^2 = A + Bx^2 + Cx^4 + D/x^2 + E/x^4 + F/x^6$$

[A, B, C, D, E, F]

- SCHOTT3X4 (Schott3X4)

- SCHOTT3X4

$$n^2 = A + Bx^2 + Cx^4 + D/x^2 + E/x^4 + F/x^6 + G/x^8$$

[A, B, C, D, E, F, G]

- SCHOTT3X5 (Schott3X5)

- SCHOTT3X5

$$n^2 = A + Bx^2 + Cx^4 + D/x^2 + E/x^4 + F/x^6 + G/x^8 + H/x^{10}$$

[A, B, C, D, E, F, G, H]

- SCHOTT4X4 (Schott4X4)

- SCHOTT4X4

$$n^2 = A + Bx^2 + Cx^4 + Dx^6 + E/x^2 + F/x^4 + G/x^6 + H/x^8$$

[A, B, C, D, E, F, G, H]

- SCHOTT5X5 (Schott5X5)

- SCHOTT5X5

$$n^2 = A + Bx^2 + Cx^4 + Dx^6 + Ex^8 + F/x^2 + G/x^4 + H/x^6 + J/x^8 + K/x^{10}$$

[A, B, C, D, E, F, G, H, J, K]

- SELL1T (Sell1T)

- SELL1T

$$n^2 = 1 + Ax^2/(x^2 - B^2)$$

[A, B]

- SELL1TA (Sell1TA)

- SELL1TA

$$n^2 = A + Bx^2/(x^2 - C^2)$$

[A, B, C]

- SELL2T (Sell2T)

- SELL2T

$$n^2 = 1 + Ax^2/(x^2 - B^2) + Cx^2/(x^2 - D^2)$$

[A, B, C, D]

- SELL2TA (Sell2TA)

- SELL2TA

$$n^2 = A + Bx^2/(x^2 - C^2) + Dx^2/(x^2 - E^2)$$

[A, B, C, D, E]

- SELL3T (Sell3T)

- SELL3T

$$n^2 = 1 + Ax^2/(x^2 - B^2) + Cx^2/(x^2 - D^2) + Ex^2/(x^2 - F^2)$$

[A, B, C, D, E, F]

- SELL3TA (Sell3TA)

- SELL3TA

$$n^2 = A + Bx^2/(x^2 - C^2) + Dx^2/(x^2 - E^2) + Fx^2/(x^2 - G^2)$$

[A, B, C, D, E, F, G]

- SELL4T (Sell4T)

- SELL4T

$$n^2 = 1 + Ax^2/(x^2 - B^2) + Cx^2/(x^2 - D^2) + Ex^2/(x^2 - F^2) + Gx^2/(x^2 - H^2)$$

[A, B, C, D, E, F, G, H]

- SELL4TA (Sell4TA)

- SELL4TA

$$n^2 = A + Bx^2/(x^2 - C^2) + Dx^2/(x^2 - E^2) + Fx^2/(x^2 - G^2) + Hx^2/(x^2 - J^2)$$

[A, B, C, D, E, F, G, H, J]

- SELL5T (Sell5T)

- SELL5T

$$n^2 = 1 + Ax^2/(x^2 - B^2) + Cx^2/(x^2 - D^2) + Ex^2/(x^2 - F^2) + Gx^2/(x^2 - H^2) + Jx^2/(x^2 - K^2)$$

[A, B, C, D, E, F, G, H, J, K]

- SELL5TA (Sell5TA)

- SELL5TA

$$n^2 = A + Bx^2/(x^2 - C^2) + Dx^2/(x^2 - E^2) + Fx^2/(x^2 - G^2) + Hx^2/(x^2 - J^2) + Kx^2/(x^2 - M^2)$$

[A, B, C, D, E, F, G, H, J, K, M]

- SELL6TA (Sell6TA)

- SELL6TA

$$n^2 = A + Bx^2/(x^2 - C^2) + Dx^2/(x^2 - E^2) + Fx^2/(x^2 - G^2) + Hx^2/(x^2 - J^2) + Kx^2/(x^2 - M^2) + Nx^2/(x^2 - P^2)$$

[A, B, C, D, E, F, G, H, J, K, M, N, P]

- SELL7TA (Sell7TA)

- SELL7TA

$$n^2 = A + Bx^2/(x^2 - C^2) + Dx^2/(x^2 - E^2) + Fx^2/(x^2 - G^2) + Hx^2/(x^2 - J^2) + Kx^2/(x^2 - M^2) + Nx^2/(x^2 - P^2) + Qx^2/(x^2 - R^2)$$

[A, B, C, D, E, F, G, H, J, K, M, N, P, Q, R]

- SELLMOD1 (Sellmod1)

- SELLMOD1

$$n^2 = A + Bx + Cx^2 + Dx^2/(x^2 - E^2)$$

[A, B, C, D, E]

- SELLMOD1A (Sellmod1A)

- SELLMOD1A

$$n^2 = A + Bx + Cx^2 + D/(x^2 - E^2)$$

[A, B, C, D, E]

- SELLMOD2 (Sellmod2)

- SELLMOD2

$$n^2 = A + Bx + Cx^4 + Dx^2/(x^2 - E^2)$$

[A, B, C, D, E]

- SELLMOD2A (Sellmod2A)

- SELLMOD2A

$$n^2 = A + Bx + Cx^4 + D/(x^2 - E^2)$$

[A, B, C, D, E]

- SELLMOD3 (Sellmod3)

- SELLMOD3

$$n^2 = (Ax^2 + B)/(x^2 - C^2) + Dx^2/(x^2 - E^2)$$

[A, B, C, D, E]

- SELLMOD3 With Offset

$$n^2 = (Ax^2 + B)/(x^2 - C^2) + Dx^2/(x^2 - E^2) + \text{Offset}$$

[A, B, C, D, E, Offset]

- SELLMOD4 (Sellmod4)

- SELLMOD4

$$n^2 = A + Bx^2 + C/x^2 + Dx^2/(x^2 - E^2) + Fx^2/(x^2 - G^2)$$

[A, B, C, D, E, F, G]

- SELLMOD4A (Sellmod4A)

- SELLMOD4A

$$n^2 = A + Bx^2 + C/x^2 + D/(x^2 - E^2) + F/(x^2 - G^2)$$

[A, B, C, D, E, F, G]

- SELLMOD5 (Sellmod5)

- SELLMOD5
$$n^2 = A + Bx^2 + Cx^2/(x^2 - D^2) + Ex^2/(x^2 - F^2)$$

[A, B, C, D, E, F]
- SELLMOD6 (Sellmod6)
  - SELLMOD6
$$n^2 = A + Bx^2/(x^2 - C^2) + D/(x^2 - E^2)$$

[A, B, C, D, E]
- SELLMOD7 (Sellmod7)
  - SELLMOD7
$$n^2 = A + Bx^2 + Cx^4 + D/x^6 + Ex^2/(x^2 - F^2)$$

[A, B, C, D, E, F]
- SELLMOD7A (Sellmod7A)
  - SELLMOD7A
$$n^2 = A + Bx^2 + Cx^4 + D/x^6 + E/(x^2 - F^2)$$

[A, B, C, D, E, F]
- SELLMOD8 (Sellmod8)
  - SELLMOD8
$$n^2 = A + Bx^2 + Cx^4 + D/(x^2 - E^2) + F/(x^2 - G^2)$$

[A, B, C, D, E, F, G]
- SELLMOD9 (Sellmod9)
  - SELLMOD9
$$n^2 = A + B/x^2 + C/x^4 + D/x^6 + Ex^2/(x^2 - F^2)$$

[A, B, C, D, E, F]

## 3.12 Peak

- Arnold Cohen Log-Normal Peak Shifted (ArnoldCohenLogNormalShifted)
  - Arnold Cohen Log-Normal Peak Shifted
$$y = a * (\exp(-0.5 * ((\ln(x - f) - b)/c)^2)) / (d * (x - g))$$

[a, b, c, d, f, g]
  - Arnold Cohen Log-Normal Peak Shifted With Offset
$$y = a * (\exp(-0.5 * ((\ln(x - f) - b)/c)^2)) / (d * (x - g)) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- Arnold Cohen Two-Parameter Log-Normal Peak Shifted (ArnoldCohenTwoParameterLogNormalShifted)

- Arnold Cohen Two-Parameter Log-Normal Peak Shifted

$$y = \exp(-0.5 * ((\ln(x - d) - b)/c)^2) / (\sqrt{2 * \pi} * c * (x - f))$$

[b, c, d, f]

- Arnold Cohen Two-Parameter Log-Normal Peak Shifted With Offset

$$y = \exp(-0.5 * ((\ln(x - d) - b)/c)^2) / (\sqrt{2 * \pi} * c * (x - f)) + \text{Offset}$$

[b, c, d, f, Offset]

- Box Lucas A (BoxLucasA)

- Box Lucas A

$$y = a * (1.0 - b^x)$$

[a, b]

- Box Lucas A With Offset

$$y = a * (1.0 - b^x) + \text{Offset}$$

[a, b, Offset]

- Box Lucas A Shifted (BoxLucasAShifted)

- Box Lucas A Shifted

$$y = a * (1.0 - b^{x-c})$$

[a, b, c]

- Box Lucas A Shifted With Offset

$$y = a * (1.0 - b^{x-c}) + \text{Offset}$$

[a, b, c, Offset]

- Box Lucas B (BoxLucasB)

- Box Lucas B

$$y = a * (1.0 - \exp(-bx))$$

[a, b]

- Box Lucas B With Offset

$$y = a * (1.0 - \exp(-bx)) + \text{Offset}$$

[a, b, Offset]

- Box Lucas B Shifted (BoxLucasBShifted)

- Box Lucas B Shifted

$$y = a * (1.0 - \exp(-b(x - c)))$$

[a, b, c]

- Box Lucas B Shifted With Offset

$$y = a * (1.0 - \exp(-b(x - c))) + \text{Offset}$$

[a, b, c, Offset]

- Box Lucas C (BoxLucasC)

- Box Lucas C

$$y = (a/(a - b)) * (\exp(-bx) - \exp(-ax))$$

[a, b]

- Box Lucas C With Offset

$$y = (a/(a - b)) * (\exp(-bx) - \exp(-ax)) + \text{Offset}$$

[a, b, Offset]

- Box Lucas C shifted (BoxLucasCShifted)

- Box Lucas C shifted

$$y = (a/(a - b)) * (\exp(-b(x - c)) - \exp(-a(x - c)))$$

[a, b, c]

- Box Lucas C shifted With Offset

$$y = (a/(a - b)) * (\exp(-b(x - c)) - \exp(-a(x - c))) + \text{Offset}$$

[a, b, c, Offset]

- Extreme Value 4 Parameter Peak (ExtremeValue4ParameterPeak)

- Extreme Value 4 Parameter Peak

$$y = a * \exp(-x + b + c - c * d * \exp(-1.0 * ((x + c * \ln(d) - b)/c)) / (c * d))$$

[a, b, c, d]

- Extreme Value 4 Parameter Peak With Offset

$$y = a * \exp(-x + b + c - c * d * \exp(-1.0 * ((x + c * \ln(d) - b)/c)) / (c * d)) + \text{Offset}$$

[a, b, c, d, Offset]

- Extreme Value Area (ExtremeValueArea)

- Extreme Value Area

$$y = (a/c) * \exp(-\exp(-(x - b)/c)) - ((x - b)/c)$$

[a, b, c]

- Extreme Value Area With Offset

$$y = (a/c) * \exp(-\exp(-(x - b)/c)) - ((x - b)/c) + \text{Offset}$$

[a, b, c, Offset]

- Extreme Value Peak (`ExtremeValuePeak`)

- Extreme Value Peak

$$y = a * \exp(-\exp(-(x - b)/c)) - ((x - b)/c) + 1.0$$

[a, b, c]

- Extreme Value Peak With Offset

$$y = a * \exp(-\exp(-(x - b)/c)) - ((x - b)/c) + 1.0 + \text{Offset}$$

[a, b, c, Offset]

- Gaussian Area (`GaussianArea`)

- Gaussian Area

$$y = (a / (\text{pow}(2 * \pi, 0.5) * c)) * \exp(-0.5 * ((x - b)/c)^2)$$

[a, b, c]

- Gaussian Area With Offset

$$y = (a / (\text{pow}(2 * \pi, 0.5) * c)) * \exp(-0.5 * ((x - b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]

- Gaussian Peak (`GaussianPeak`)

- Gaussian Peak

$$y = a * \exp(-0.5 * ((x - b)/c)^2)$$

[a, b, c]

- Gaussian Peak With Offset

$$y = a * \exp(-0.5 * ((x - b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]

- Gaussian Peak Modified (`GaussianPeak_Modified`)

- Gaussian Peak Modified

$$y = a * \exp(-0.5 * ((x - b)/c)^d)$$

[a, b, c, d]

- Gaussian Peak Modified With Offset

$$y = a * \exp(-0.5 * ((x - b)/c)^d) + \text{Offset}$$

[a, b, c, d, Offset]

- Hamilton (`Hamilton`)

- Hamilton

$$Vb = Gb * (I/mu)^{\ln(mu/I)/(B*B)} + (Vb_{max} * I)/(I + sigma_b)$$

[Gb, mu, B, Vbmax, sigma\_b]



- Hamilton With Offset
$$Vb = Gb * (I/mu)^{\ln(mu/I)/(B*B)} + (Vb_{max} * I)/(I + sigma\_b) + \text{Offset}$$

[Gb, mu, B, Vbmax, sigma\_b, Offset]
- Laplace Area (LaplaceArea)
  - Laplace Area
$$y = (a/(pow(2.0, 0.5) * c)) * \exp((-1.0 * pow(2.0, 0.5) * abs(x - b))/c)$$

[a, b, c]
  - Laplace Area With Offset
$$y = (a/(pow(2.0, 0.5) * c)) * \exp((-1.0 * pow(2.0, 0.5) * abs(x - b))/c) + \text{Offset}$$

[a, b, c, Offset]
- Laplace Peak (LaplacePeak)
  - Laplace Peak
$$y = a * \exp((-1.0 * pow(2.0, 0.5) * abs(x - b))/c)$$

[a, b, c]
  - Laplace Peak With Offset
$$y = a * \exp((-1.0 * pow(2.0, 0.5) * abs(x - b))/c) + \text{Offset}$$

[a, b, c, Offset]
- Log-Normal 4 Parameter (LogNormal4Parameter)
  - Log-Normal 4 Parameter
$$y = a * \exp(-1.0 * (\ln(2) * \ln(((x - b) * (d^2 - 1))/(c * d)) + 1.0)^2) / \ln(d)^2)$$

[a, b, c, d]
  - Log-Normal 4 Parameter With Offset
$$y = a * \exp(-1.0 * (\ln(2) * \ln(((x - b) * (d^2 - 1))/(c * d)) + 1.0)^2) / \ln(d)^2) + \text{Offset}$$

[a, b, c, d, Offset]
- Log-Normal Peak A (LogNormalA)
  - Log-Normal Peak A
$$y = a * \exp(-0.5 * ((\ln(x) - b)/c)^2)$$

[a, b, c]
  - Log-Normal Peak A With Offset
$$y = a * \exp(-0.5 * ((\ln(x) - b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]
- Log-Normal Peak A Shifted (LogNormalAShifted)

- Log-Normal Peak A Shifted
$$y = a * \exp(-0.5 * ((\ln(x - d) - b)/c)^2)$$

[a, b, c, d]
- Log-Normal Peak A Shifted With Offset
$$y = a * \exp(-0.5 * ((\ln(x - d) - b)/c)^2) + \text{Offset}$$

[a, b, c, d, Offset]
- Log-Normal Peak A Modified (LogNormalA\_Modified)
  - Log-Normal Peak A Modified
$$y = a * \exp(-0.5 * ((\ln(x) - b)/c)^d)$$

[a, b, c, d]
  - Log-Normal Peak A Modified With Offset
$$y = a * \exp(-0.5 * ((\ln(x) - b)/c)^d) + \text{Offset}$$

[a, b, c, d, Offset]
- Log-Normal Peak A Modified Shifted (LogNormalA\_ModifiedShifted)
  - Log-Normal Peak A Modified Shifted
$$y = a * \exp(-0.5 * ((\ln(x - f) - b)/c)^d)$$

[a, b, c, d, f]
  - Log-Normal Peak A Modified Shifted With Offset
$$y = a * \exp(-0.5 * ((\ln(x - f) - b)/c)^d) + \text{Offset}$$

[a, b, c, d, f, Offset]
- Log-Normal Peak B (LogNormalB)
  - Log-Normal Peak B
$$y = a * \exp(-0.5 * (\ln(x/b)/c)^2)$$

[a, b, c]
  - Log-Normal Peak B With Offset
$$y = a * \exp(-0.5 * (\ln(x/b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]
- Log-Normal Peak B Shifted (LogNormalBShifted)
  - Log-Normal Peak B Shifted
$$y = a * \exp(-0.5 * (\ln((x - d)/b)/c)^2)$$

[a, b, c, d]

- Log-Normal Peak B Shifted With Offset
$$y = a * \exp(-0.5 * (\ln((x - d)/b)/c)^2) + \text{Offset}$$

[a, b, c, d, Offset]
- Log-Normal Peak B Modified (LogNormalB\_Modified)
  - Log-Normal Peak B Modified
$$y = a * \exp(-0.5 * (\ln(x/b)/c)^d)$$

[a, b, c, d]
  - Log-Normal Peak B Modified With Offset
$$y = a * \exp(-0.5 * (\ln(x/b)/c)^d) + \text{Offset}$$

[a, b, c, d, Offset]
- Log-Normal Peak B Modified Shifted (LogNormalB\_ModifiedShifted)
  - Log-Normal Peak B Modified Shifted
$$y = a * \exp(-0.5 * (\ln((x - f)/b)/c)^d)$$

[a, b, c, d, f]
  - Log-Normal Peak B Modified Shifted With Offset
$$y = a * \exp(-0.5 * (\ln((x - f)/b)/c)^d) + \text{Offset}$$

[a, b, c, d, f, Offset]
- Logistic Area (LogisticArea)
  - Logistic Area
$$y = a * \exp(-1.0 * (x - b)/c) / (c * (1.0 + \exp(-1.0 * (x - b)/c))^2)$$

[a, b, c]
  - Logistic Area With Offset
$$y = a * \exp(-1.0 * (x - b)/c) / (c * (1.0 + \exp(-1.0 * (x - b)/c))^2) + \text{Offset}$$

[a, b, c, Offset]
- Logistic Peak (LogisticPeak)
  - Logistic Peak
$$y = 4a * \exp(-1.0 * (x - b)/c) / (1.0 + \exp(-1.0 * (x - b)/c))^2$$

[a, b, c]
  - Logistic Peak With Offset
$$y = 4a * \exp(-1.0 * (x - b)/c) / (1.0 + \exp(-1.0 * (x - b)/c))^2 + \text{Offset}$$

[a, b, c, Offset]
- Lorentzian Modified Peak A (LorentzianModifiedPeakA)

- Lorentzian Modified Peak A
$$y = 1.0 / (1.0 + (x - a)^b)$$

[a, b]
- Lorentzian Modified Peak A With Offset
$$y = 1.0 / (1.0 + (x - a)^b) + \text{Offset}$$

[a, b, Offset]
- Lorentzian Modified Peak B (LorentzianModifiedPeakB)
  - Lorentzian Modified Peak B
$$y = 1.0 / (a + (x - b)^c)$$

[a, b, c]
  - Lorentzian Modified Peak B With Offset
$$y = 1.0 / (a + (x - b)^c) + \text{Offset}$$

[a, b, c, Offset]
- Lorentzian Modified Peak C (LorentzianModifiedPeakC)
  - Lorentzian Modified Peak C
$$y = a / (b + (x - c)^d)$$

[a, b, c, d]
  - Lorentzian Modified Peak C With Offset
$$y = a / (b + (x - c)^d) + \text{Offset}$$

[a, b, c, d, Offset]
- Lorentzian Modified Peak D (LorentzianModifiedPeakD)
  - Lorentzian Modified Peak D
$$y = 1.0 / (1.0 + ((x - a) / b)^c)$$

[a, b, c]
  - Lorentzian Modified Peak D With Offset
$$y = 1.0 / (1.0 + ((x - a) / b)^c) + \text{Offset}$$

[a, b, c, Offset]
- Lorentzian Modified Peak E (LorentzianModifiedPeakE)
  - Lorentzian Modified Peak E
$$y = 1.0 / (a + ((x - b) / c)^d)$$

[a, b, c, d]

- Lorentzian Modified Peak E With Offset
$$y = 1.0/(a + ((x - b)/c)^d) + \text{Offset}$$
[a, b, c, d, Offset]
- Lorentzian Modified Peak F (LorentzianModifiedPeakF)
  - Lorentzian Modified Peak F
$$y = a/(b + ((x - c)/d)^f)$$
[a, b, c, d, f]
  - Lorentzian Modified Peak F With Offset
$$y = a/(b + ((x - c)/d)^f) + \text{Offset}$$
[a, b, c, d, f, Offset]
- Lorentzian Modified Peak G (LorentzianModifiedPeakG)
  - Lorentzian Modified Peak G
$$y = a/(1.0 + ((x - b)/c)^d)$$
[a, b, c, d]
  - Lorentzian Modified Peak G With Offset
$$y = a/(1.0 + ((x - b)/c)^d) + \text{Offset}$$
[a, b, c, d, Offset]
- Lorentzian Peak A (LorentzianPeakA)
  - Lorentzian Peak A
$$y = 1.0/(1.0 + (x - a)^2)$$
[a]
  - Lorentzian Peak A With Offset
$$y = 1.0/(1.0 + (x - a)^2) + \text{Offset}$$
[a, Offset]
- Lorentzian Peak B (LorentzianPeakB)
  - Lorentzian Peak B
$$y = 1.0/(a + (x - b)^2)$$
[a, b]
  - Lorentzian Peak B With Offset
$$y = 1.0/(a + (x - b)^2) + \text{Offset}$$
[a, b, Offset]
- Lorentzian Peak C (LorentzianPeakC)

- Lorentzian Peak C

$$y = a/(b + (x - c)^2)$$

[a, b, c]

- Lorentzian Peak C With Offset

$$y = a/(b + (x - c)^2) + \text{Offset}$$

[a, b, c, Offset]

- Lorentzian Peak D (LorentzianPeakD)

- Lorentzian Peak D

$$y = 1.0/(1.0 + ((x - a)/b)^2)$$

[a, b]

- Lorentzian Peak D With Offset

$$y = 1.0/(1.0 + ((x - a)/b)^2) + \text{Offset}$$

[a, b, Offset]

- Lorentzian Peak E (LorentzianPeakE)

- Lorentzian Peak E

$$y = 1.0/(a + ((x - b)/c)^2)$$

[a, b, c]

- Lorentzian Peak E With Offset

$$y = 1.0/(a + ((x - b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]

- Lorentzian Peak F (LorentzianPeakF)

- Lorentzian Peak F

$$y = a/(b + ((x - c)/d)^2)$$

[a, b, c, d]

- Lorentzian Peak F With Offset

$$y = a/(b + ((x - c)/d)^2) + \text{Offset}$$

[a, b, c, d, Offset]

- Lorentzian Peak G (LorentzianPeakG)

- Lorentzian Peak G

$$y = a/(1.0 + ((x - b)/c)^2)$$

[a, b, c]

- Lorentzian Peak G With Offset

$$y = a / (1.0 + ((x - b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]

- Pseudo-Voight Peak (PseudoVoight)

- Pseudo-Voight Peak

$$y = a * (d * (1 / (1 + ((x - b)/c)^2)) + (1 - d) * \exp(-0.5 * ((x - b)/c)^2))$$

[a, b, c, d]

- Pseudo-Voight Peak With Offset

$$y = a * (d * (1 / (1 + ((x - b)/c)^2)) + (1 - d) * \exp(-0.5 * ((x - b)/c)^2)) + \text{Offset}$$

[a, b, c, d, Offset]

- Pseudo-Voight Peak Modified (PseudoVoight\_Modified)

- Pseudo-Voight Peak Modified

$$y = a * (d * (1 / (1 + ((x - b)/c)^f)) + (1 - d) * \exp(-0.5 * ((x - b)/c)^g))$$

[a, b, c, d, f, g]

- Pseudo-Voight Peak Modified With Offset

$$y = a * (d * (1 / (1 + ((x - b)/c)^f)) + (1 - d) * \exp(-0.5 * ((x - b)/c)^g)) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- Pulse Peak (Pulse)

- Pulse Peak

$$y = 4a * \exp(-(x - b)/c) * (1.0 - \exp(-(x - b)/c))$$

[a, b, c]

- Pulse Peak With Offset

$$y = 4a * \exp(-(x - b)/c) * (1.0 - \exp(-(x - b)/c)) + \text{Offset}$$

[a, b, c, Offset]

- UVED Fruit Growth Rate (UVEDFruitGrowthRate)

- UVED Fruit Growth Rate

$$y = ((t/5)^{(a-1)} * (1 - t/5)^{(b-1)}) / (((a - 1)/(a + b - 2))^{(a-1)} * ((b - 1)/(a + b - 2))^{(b-1)})$$

[a, b]

- UVED Fruit Growth Rate With Offset

$$y = ((t/5)^{(a-1)} * (1 - t/5)^{(b-1)}) / (((a - 1)/(a + b - 2))^{(a-1)} * ((b - 1)/(a + b - 2))^{(b-1)}) + \text{Offset}$$

[a, b, Offset]

- UVED Fruit Growth Rate B (UVEDFruitGrowthRateB)

- UVED Fruit Growth Rate B

$$y = c * ((t/5)^{(a-1)} * (1 - t/5)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)})$$

[a, b, c]

- UVED Fruit Growth Rate B With Offset

$$y = c * ((t/5)^{(a-1)} * (1 - t/5)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)}) + \text{Offset}$$

[a, b, c, Offset]

- UVED Fruit Growth Rate Scaled (UVEDFruitGrowthRateScaled)

- UVED Fruit Growth Rate Scaled

$$y = (c * t)^{(a-1)} * (1 - (c * t)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)})$$

[a, b, c]

- UVED Fruit Growth Rate Scaled With Offset

$$y = (c * t)^{(a-1)} * (1 - (c * t)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)}) + \text{Offset}$$

[a, b, c, Offset]

- UVED Fruit Growth Rate Scaled B (UVEDFruitGrowthRateScaledB)

- UVED Fruit Growth Rate Scaled B

$$y = d * (c * t)^{(a-1)} * (1 - (c * t)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)})$$

[a, b, c, d]

- UVED Fruit Growth Rate Scaled B With Offset

$$y = d * (c * t)^{(a-1)} * (1 - (c * t)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)}) + \text{Offset}$$

[a, b, c, d, Offset]

- UVED Fruit Growth Rate Transform (UVEDFruitGrowthRateTransform)

- UVED Fruit Growth Rate Transform

$$y = (c * t + d)^{(a-1)} * (1 - (c * t + d)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)})$$

[a, b, c, d]

- UVED Fruit Growth Rate Transform With Offset

$$y = (c * t + d)^{(a-1)} * (1 - (c * t + d)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)}) + \text{Offset}$$

[a, b, c, d, Offset]

- UVED Fruit Growth Rate Transform B (UVEDFruitGrowthRateTransformB)



- UVED Fruit Growth Rate Transform B

$$y = f * (c * t + d)^{(a-1)} * (1 - (c * t + d)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)})$$

[a, b, c, d, f]

- UVED Fruit Growth Rate Transform B With Offset

$$y = f * (c * t + d)^{(a-1)} * (1 - (c * t + d)^{(b-1)}) / (((a-1)/(a+b-2))^{(a-1)} * ((b-1)/(a+b-2))^{(b-1)}) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Weibull Peak (WeibullPeak)

- Weibull Peak

$$y = a * \exp(-0.5 * (\ln(x/b)/c)^2)$$

[a, b, c]

- Weibull Peak With Offset

$$y = a * \exp(-0.5 * (\ln(x/b)/c)^2) + \text{Offset}$$

[a, b, c, Offset]

- Weibull Peak Shifted (WeibullPeakShifted)

- Weibull Peak Shifted

$$y = a * \exp(-0.5 * (\ln((x-d)/b)/c)^2)$$

[a, b, c, d]

- Weibull Peak Shifted With Offset

$$y = a * \exp(-0.5 * (\ln((x-d)/b)/c)^2) + \text{Offset}$$

[a, b, c, d, Offset]

- Weibull Peak Modified (WeibullPeak\_Modified)

- Weibull Peak Modified

$$y = a * \exp(-0.5 * (\ln(x/b)/c)^d)$$

[a, b, c, d]

- Weibull Peak Modified With Offset

$$y = a * \exp(-0.5 * (\ln(x/b)/c)^d) + \text{Offset}$$

[a, b, c, d, Offset]

- Weibull Peak Modified Shifted (WeibullPeak\_ModifiedShifted)

- Weibull Peak Modified Shifted

$$y = a * \exp(-0.5 * (\ln((x-f)/b)/c)^d)$$

[a, b, c, d, f]

- Weibull Peak Modified Shifted With Offset

$$y = a * \exp(-0.5 * (\ln((x - f)/b)/c)^d) + \text{Offset}$$

[a, b, c, d, f, Offset]

### 3.13 Polyfunctional

- User-Selectable Polyfunctional (UserSelectablePolyfunctional)

- User-Selectable Polyfunctional

$$y = \text{user} - \text{selectablefunction}$$

[]

### 3.14 Polynomial

- 3rd Order (Cubic) (Cubic)

- 3rd Order (Cubic)

$$y = a + bx + cx^2 + dx^3$$

[a, b, c, d]

- 1st Order (Linear) (Linear)

- 1st Order (Linear)

$$y = a + bx$$

[a, b]

- Marc Plante's Custom Quadratic (MarcPlanteQuadratic)

- Marc Plante's Custom Quadratic

$$y = (-b + (b^2 - 4a(c - x))^{0.5})/2/a$$

[a, b, c]

- Marc Plante's Custom Quadratic With Offset

$$y = (-b + (b^2 - 4a(c - x))^{0.5})/2/a + \text{Offset}$$

[a, b, c, Offset]

- 2nd Order (Quadratic) (Quadratic)

- 2nd Order (Quadratic)

$$y = a + bx + cx^2$$

[a, b, c]

- 4th Order (Quartic) (Quartic)

- 4th Order (Quartic)  
$$y = a + bx + cx^2 + dx^3 + fx^4$$

[a, b, c, d, f]
- 5th Order (Quintic) (Quintic)
  - 5th Order (Quintic)  
$$y = a + bx + cx^2 + dx^3 + fx^4 + gx^5$$

[a, b, c, d, f, g]
- User-Customizable Polynomial (UserCustomizablePolynomial)
  - User-Customizable Polynomial  
$$y = user - customizablepolynomial$$

[]
- User-Selectable Polynomial (UserSelectablePolynomial)
  - User-Selectable Polynomial  
$$y = user - selectablepolynomial$$

## 3.15 Power

- Geometric Modified (Geometric\_Modified)
  - Geometric Modified  
$$y = a * x^{(b/x)}$$

[a, b]
  - Geometric Modified With Offset  
$$y = a * x^{(b/x)} + \text{Offset}$$

[a, b, Offset]
- Power A Modified (PowerA\_Modified)
  - Power A Modified  
$$y = a * b^x$$

[a, b]
  - Power A Modified With Offset  
$$y = a * b^x + \text{Offset}$$

[a, b, Offset]
- Power A Modified Transform (PowerA\_Modified\_Transform)

- Power A Modified Transform

$$y = a * b^{cx+d}$$

[a, b, c, d]

- Power A Modified Transform With Offset

$$y = a * b^{cx+d} + \text{Offset}$$

[a, b, c, d, Offset]

- Power B Modified (PowerB\_Modified)

- Power B Modified

$$y = a^{\ln(x)}$$

[a]

- Power B Modified With Offset

$$y = a^{\ln(x)} + \text{Offset}$$

[a, Offset]

- Power B Modified Transform (PowerB\_Modified\_Transform)

- Power B Modified Transform

$$y = a^{\ln(bx+c)}$$

[a, b, c]

- Power B Modified Transform With Offset

$$y = a^{\ln(bx+c)} + \text{Offset}$$

[a, b, c, Offset]

- Power C Modified (PowerC\_Modified)

- Power C Modified

$$y = (a + x)^b$$

[a, b]

- Power C Modified With Offset

$$y = (a + x)^b + \text{Offset}$$

[a, b, Offset]

- Power C Modified Transform (PowerC\_Modified\_Transform)

- Power C Modified Transform

$$y = (a + bx)^c$$

[a, b, c]

- Power C Modified Transform With Offset

$$y = (a + bx)^c + \text{Offset}$$

[a, b, c, Offset]

- Power Law With Exponential Cutoff (PowerLawExponentialCutoff)

- Power Law With Exponential Cutoff

$$p(k) = C * k^{(-T)} * \exp(-k/K)$$

[C, T, K]

- Power Law With Exponential Cutoff With Offset

$$p(k) = C * k^{(-T)} * \exp(-k/K) + \text{Offset}$$

[C, T, K, Offset]

- Root (PowerRoot)

- Root

$$y = a^{(1.0/x)}$$

[a]

- Root With Offset

$$y = a^{(1.0/x)} + \text{Offset}$$

[a, Offset]

- Simple Power (SimplePower)

- Simple Power

$$y = x^a$$

[a]

- Simple Power With Offset

$$y = x^a + \text{Offset}$$

[a, Offset]

- Standard Geometric (StandardGeometric)

- Standard Geometric

$$y = a * x^{bx}$$

[a, b]

- Standard Geometric With Offset

$$y = a * x^{bx} + \text{Offset}$$

[a, b, Offset]

- Standard Power (StandardPower)

- Standard Power

$$y = a * x^b$$

[a, b]

- Standard Power With Offset

$$y = a * x^b + \text{Offset}$$

[a, b, Offset]

- X Shifted Power (XShiftedPower)

- X Shifted Power

$$y = a * (x - b)^c$$

[a, b, c]

- X Shifted Power With Offset

$$y = a * (x - b)^c + \text{Offset}$$

[a, b, c, Offset]

## 3.16 Rational

- User-Selectable Rational (UserSelectableRational)

- User-Selectable Rational

$$y = user - selectablerational$$

[]

- User-Selectable Rational With Offset

$$y = user - selectablerational + \text{Offset}$$

[Offset]

## 3.17 Sigmoidal

- BET Sigmoidal A (BET\_Sigmoidal\_A)

- BET Sigmoidal A

$$y = x / (a + bx - (a + b)x^2)$$

[a, b]

- BET Sigmoidal A With Offset

$$y = x / (a + bx - (a + b)x^2) + \text{Offset}$$

[a, b, Offset]

- BET Sigmoidal B (BET\_Sigmoidal\_B)

- BET Sigmoidal B

$$y = abx / (1.0 + (b - 2.0)x - (b - 1.0)x^2)$$

[a, b]

- BET Sigmoidal B With Offset

$$y = abx / (1.0 + (b - 2.0)x - (b - 1.0)x^2) + \text{Offset}$$

[a, b, Offset]

- Boltzmann Sigmoid A (BoltzmannSigmoidA)

- Boltzmann Sigmoid A

$$y = (a - b) / (1.0 + \exp((x - c)/d)) + b$$

[a, b, c, d]

- Boltzmann Sigmoid B (BoltzmannSigmoidB)

- Boltzmann Sigmoid B

$$y = (a - b) / (1.0 + \exp((x - c)/(dx))) + b$$

[a, b, c, d]

- Chapman (Chapman)

- Chapman

$$y = a * (1.0 - \exp(-bx))^c$$

[a, b, c]

- Chapman With Offset

$$y = a * (1.0 - \exp(-bx))^c + \text{Offset}$$

[a, b, c, Offset]

- Don Levin Sigmoid (DonLevinSigmoid)

- Don Levin Sigmoid

$$y = \frac{a1}{1.0 + \exp(-(x - b1)/c1))} + \frac{a2}{1.0 + \exp(-(x - b2)/c2))} + \frac{a3}{1.0 + \exp(-(x - b3)/c3)}$$

[a1, b1, c1, a2, b2, c2, a3, b3, c3]

- Don Levin Sigmoid With Offset

$$y = \frac{a1}{1.0 + \exp(-(x - b1)/c1))} + \frac{a2}{1.0 + \exp(-(x - b2)/c2))} + \frac{a3}{1.0 + \exp(-(x - b3)/c3)} + \text{Offset}$$

[a1, b1, c1, a2, b2, c2, a3, b3, c3, Offset]

- Five-Parameter Logistic (FiveParameterLogistic)

- Five-Parameter Logistic

$$y = d + (a - d) / (1.0 + (x/c)^b)^f$$

[a, b, c, d, f]

- Four-Parameter Logistic (`FourParameterLogistic`)

- Four-Parameter Logistic

$$y = d + (a - d) / (1.0 + (x/c)^b)$$

[a, b, c, d]

- Generalised Logistic (`GeneralisedLogistic`)

- Generalised Logistic

$$y = A + C / (1 + T * \exp(-B * (x - M)))^{1/T}$$

[A, C, M, B, T]

- Gompertz A (`GompertzA`)

- Gompertz A

$$y = a * \exp(-\exp(b - cx))$$

[a, b, c]

- Gompertz A With Offset

$$y = a * \exp(-\exp(b - cx)) + \text{Offset}$$

[a, b, c, Offset]

- Gompertz B (`GompertzB`)

- Gompertz B

$$y = a * \exp(-\exp((x - b)/c))$$

[a, b, c]

- Gompertz B With Offset

$$y = a * \exp(-\exp((x - b)/c)) + \text{Offset}$$

[a, b, c, Offset]

- Gompertz C (`GompertzC`)

- Gompertz C

$$y = a * \exp(b * \exp(c * x))$$

[a, b, c]

- Gompertz C With Offset

$$y = a * \exp(b * \exp(c * x)) + \text{Offset}$$

[a, b, c, Offset]



- Hill (Hill)
  - Hill
 
$$y = ax^b / (c^b + x^b)$$

[a, b, c]
  - Hill With Offset
 
$$y = ax^b / (c^b + x^b) + \text{Offset}$$

[a, b, c, Offset]
- JJacquelin Generalised Logistic (JJacquelinGeneralisedLogistic)
  - JJacquelin Generalised Logistic
 
$$y = L / (1.0 + (b * \exp(-k * t)) + (c * \exp(h * t)))$$

[L, b, k, c, h]
  - JJacquelin Generalised Logistic With Offset
 
$$y = L / (1.0 + (b * \exp(-k * t)) + (c * \exp(h * t))) + \text{Offset}$$

[L, b, k, c, h, Offset]
- Janoschek Growth (Janoschek)
  - Janoschek Growth
 
$$w = a - (1.0 - \exp(-b * t^c))$$

[a, b, c]
- Janoschek Growth Modified (Janoschek\_Modified)
  - Janoschek Growth Modified
 
$$w = a - (a - w0) * (1.0 - \exp(-b * t^c))$$

[a, b, c, w0]
- Logistic A (LogisticA)
  - Logistic A
 
$$y = a / (1.0 + b * \exp(-cx))$$

[a, b, c]
  - Logistic A With Offset
 
$$y = a / (1.0 + b * \exp(-cx)) + \text{Offset}$$

[a, b, c, Offset]
- Logistic B (LogisticB)
  - Logistic B
 
$$y = a / (1.0 + (x/b)^c)$$

[a, b, c]

- Logistic B With Offset

$$y = a / (1.0 + (x/b)^c) + \text{Offset}$$

[a, b, c, Offset]

- Lomolino (Lomolino)

- Lomolino

$$y = a / (1.0 + b^{\ln(c/x)})$$

[a, b, c]

- Lomolino With Offset

$$y = a / (1.0 + b^{\ln(c/x)}) + \text{Offset}$$

[a, b, c, Offset]

- Magnetic Saturation (MagneticSaturation)

- Magnetic Saturation

$$y = ax * (1.0 + b * \exp(cx))$$

[a, b, c]

- Magnetic Saturation With Offset

$$y = ax * (1.0 + b * \exp(cx)) + \text{Offset}$$

[a, b, c, Offset]

- Morgan-Mercer-Flodin (MMF) (MorganMercerFlodin)

- Morgan-Mercer-Flodin (MMF)

$$y = (a * b + c * x^d) / (b + x^d)$$

[a, b, c, d]

- Morgan-Mercer-Flodin (MMF) With Offset

$$y = (a * b + c * x^d) / (b + x^d) + \text{Offset}$$

[a, b, c, d, Offset]

- Peters-Baskin Step-Stool: y (1) (PetersBaskin\_Y)

- Peters-Baskin Step-Stool: y (1)

$$y = \ln(c + \exp(b * d * x)) / d$$

[b, c, d]

- Peters-Baskin Step-Stool: y (1) With Offset

$$y = \ln(c + \exp(b * d * x)) / d + \text{Offset}$$

[b, c, d, Offset]

- Peters-Baskin Step-Stool: yI (2) (PetersBaskin\_YI)
  - Peters-Baskin Step-Stool: yI (2)
$$yI = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))/d1$$
$$[b2, c1, d1]$$
  - Peters-Baskin Step-Stool: yI (2) With Offset
$$yI = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))/d1 + \text{Offset}$$
$$[b2, c1, d1, \text{Offset}]$$
- Peters-Baskin Step-Stool: yII (3) (PetersBaskin\_YII)
  - Peters-Baskin Step-Stool: yII (3)
$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$
$$yII = b1 * x + K/d1$$
$$[b2, c1, d1, b1]$$
  - Peters-Baskin Step-Stool: yII (3) With Offset
$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$
$$yII = b1 * x + K/d1 + \text{Offset}$$
$$[b2, c1, d1, b1, \text{Offset}]$$
- Peters-Baskin Step-Stool: yIII (6) (PetersBaskin\_YIII)
  - Peters-Baskin Step-Stool: yIII (6)
$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$
$$yII = b1 * x + K/d1$$
$$L = \ln(\exp(b2 * c1 * d1) + \exp(b2 * c2 * d1))$$
$$yIII = yII - \ln(\exp(d2 * (b1 * c1 + L/d1)) + \exp(d2 * yII))/d2$$
$$[b2, c1, d1, b1, c2, d2]$$
  - Peters-Baskin Step-Stool: yIII (6) With Offset
$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$
$$yII = b1 * x + K/d1$$
$$L = \ln(\exp(b2 * c1 * d1) + \exp(b2 * c2 * d1))$$
$$yIII = yII - \ln(\exp(d2 * (b1 * c1 + L/d1)) + \exp(d2 * yII))/d2 + \text{Offset}$$
$$[b2, c1, d1, b1, c2, d2, \text{Offset}]$$
- Peters-Baskin Step-Stool: yIV (9) (PetersBaskin\_YIV)
  - Peters-Baskin Step-Stool: yIV (9)
$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$
$$yII = b1 * x + K/d1$$
$$L = \ln(\exp(b2 * c1 * d1) + \exp(b2 * c2 * d1))$$
$$yIII = yII - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * yII))/d2$$
$$yII, 0 = \ln(\exp(b2 * c1 * d1) + 1.0)/d1$$

$$y_{III,0} = y_{II,0} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II,0}))/d2$$

$$y_{IV} = y_{III} - y_{III,0}$$

[b2, c1, d1, b1, c2, d2]

- Peters-Baskin Step-Stool: yIV (9) With Offset

$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$

$$y_{II} = b1 * x + K/d1$$

$$L = \ln(\exp(b2 * c1 * d1) + \exp(b2 * c2 * d1))$$

$$y_{III} = y_{II} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II}))/d2$$

$$y_{II,0} = \ln(\exp(b2 * c1 * d1) + 1.0)/d1$$

$$y_{III,0} = y_{II,0} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II,0}))/d2$$

$$y_{IV} = y_{III} - y_{III,0} + \text{Offset}$$

[b2, c1, d1, b1, c2, d2, Offset]

- Peters-Baskin Step-Stool: yV (10) (PetersBaskin\_YV)

- Peters-Baskin Step-Stool: yV (10)

$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$

$$y_{II} = b1 * x + K/d1$$

$$L = \ln(\exp(b2 * c1 * d1) + \exp(b2 * c2 * d1))$$

$$y_{III} = y_{II} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II}))/d2$$

$$y_{II,0} = \ln(\exp(b2 * c1 * d1) + 1.0)/d1$$

$$y_{III,0} = y_{II,0} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II,0}))/d2$$

$$y_{IV} = y_{III} - y_{III,0} + q$$

[b2, c1, d1, b1, c2, d2, q]

- Peters-Baskin Step-Stool: yV (10) Scaled (PetersBaskin\_YV\_Scaled)

- Peters-Baskin Step-Stool: yV (10) Scaled

$$K = \ln(\exp(b2 * c1 * d1) + \exp(b2 * d1 * x))$$

$$y_{II} = b1 * x + K/d1$$

$$L = \ln(\exp(b2 * c1 * d1) + \exp(b2 * c2 * d1))$$

$$y_{III} = y_{II} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II}))/d2$$

$$y_{II,0} = \ln(\exp(b2 * c1 * d1) + 1.0)/d1$$

$$y_{III,0} = y_{II,0} - \ln(\exp(d2 * (b1 * c2 + L/d1)) + \exp(d2 * y_{II,0}))/d2$$

$$y_{IV} = \text{scale} * (y_{III} - y_{III,0}) + q$$

[b2, c1, d1, b1, c2, d2, q, scale]

- Richards (Richards)

- Richards

$$y = 1.0 / (a + b * e^{(c*x)})^d$$

[a, b, c, d]

- Richards With Offset

$$y = 1.0 / (a + b * e^{(c*x)})^d + \text{Offset}$$

[a, b, c, d, Offset]

- Sigmoid A (SigmoidA)

- Sigmoid A

$$y = 1.0 / (1.0 + \exp(-a(x - b)))$$

[a, b]

- Sigmoid A With Offset

$$y = 1.0 / (1.0 + \exp(-a(x - b))) + \text{Offset}$$

[a, b, Offset]

- Sigmoid A Modified (SigmoidA\_Modified)

- Sigmoid A Modified

$$y = 1.0 / (1.0 + \exp(-a(x - b)))^c$$

[a, b, c]

- Sigmoid A Modified With Offset

$$y = 1.0 / (1.0 + \exp(-a(x - b)))^c + \text{Offset}$$

[a, b, c, Offset]

- Sigmoid B (SigmoidB)

- Sigmoid B

$$y = a / (1.0 + \exp(-(x - b)/c))$$

[a, b, c]

- Sigmoid B With Offset

$$y = a / (1.0 + \exp(-(x - b)/c)) + \text{Offset}$$

[a, b, c, Offset]

- Sigmoid B Modified (SigmoidB\_Modified)

- Sigmoid B Modified

$$y = a / (1.0 + \exp(-(x - b)/c))^d$$

[a, b, c, d]

- Sigmoid B Modified With Offset

$$y = a / (1.0 + \exp(-(x - b)/c))^d + \text{Offset}$$

[a, b, c, d, Offset]

- Weibull (Weibull)

- Weibull

$$y = a - b * \exp(-cx^d)$$

[a, b, c, d]

- Weibull CDF (`WeibullCDF`)

- Weibull CDF

$$y = 1.0 - \exp(-(x/b)^a)$$

[a, b]

- Weibull CDF With Offset

$$y = 1.0 - \exp(-(x/b)^a) + \text{Offset}$$

[a, b, Offset]

- Weibull CDF Scaled (`WeibullCDF_scaled`)

- Weibull CDF Scaled

$$y = \text{Scale} * (1.0 - \exp(-(x/b)^a))$$

[a, b, Scale]

- Weibull CDF Scaled With Offset

$$y = \text{Scale} * (1.0 - \exp(-(x/b)^a)) + \text{Offset}$$

[a, b, Scale, Offset]

- Weibull PDF (`WeibullPDF`)

- Weibull PDF

$$y = (a/b) * (x/b)^{(a-1.0)} * \exp(-(x/b)^a)$$

[a, b]

- Weibull PDF With Offset

$$y = (a/b) * (x/b)^{(a-1.0)} * \exp(-(x/b)^a) + \text{Offset}$$

[a, b, Offset]

## 3.18 Simple

- Simple Equation 01 (`SimpleEquation_01`)

- Simple Equation 01

$$y = a$$

[a]

- Simple Equation 02 (`SimpleEquation_02`)

- Simple Equation 02

$$y = a / \text{pow}(x, -2.0)$$

[a]

- Simple Equation 02 With Offset

$$y = a / \text{pow}(x, -2.0) + \text{Offset}$$

[a, Offset]

- Simple Equation 03 (SimpleEquation\_03)

- Simple Equation 03

$$y = a * \text{pow}(\ln(x), b)$$

[a, b]

- Simple Equation 03 With Offset

$$y = a * \text{pow}(\ln(x), b) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 04 (SimpleEquation\_04)

- Simple Equation 04

$$y = a * \text{pow}(x, 3.0)$$

[a]

- Simple Equation 04 With Offset

$$y = a * \text{pow}(x, 3.0) + \text{Offset}$$

[a, Offset]

- Simple Equation 05 (SimpleEquation\_05)

- Simple Equation 05

$$y = a * \text{pow}(x, 4.0)$$

[a]

- Simple Equation 05 With Offset

$$y = a * \text{pow}(x, 4.0) + \text{Offset}$$

[a, Offset]

- Simple Equation 06 (SimpleEquation\_06)

- Simple Equation 06

$$y = x / (a + b * \text{pow}(x, 2.0))$$

[a, b]

- Simple Equation 06 With Offset

$$y = x / (a + b * \text{pow}(x, 2.0)) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 07 (SimpleEquation\_07)
  - Simple Equation 07
$$y = a * pow(b, x) * pow(x, c)$$
$$[a, b, c]$$
  - Simple Equation 07 With Offset
$$y = a * pow(b, x) * pow(x, c) + Offset$$
$$[a, b, c, Offset]$$
- Simple Equation 08 (SimpleEquation\_08)
  - Simple Equation 08
$$y = a * pow(b, 1.0/x) * pow(x, c)$$
$$[a, b, c]$$
  - Simple Equation 08 With Offset
$$y = a * pow(b, 1.0/x) * pow(x, c) + Offset$$
$$[a, b, c, Offset]$$
- Simple Equation 09 (SimpleEquation\_09)
  - Simple Equation 09
$$y = a * exp(pow(x - b, 2.0)/c)$$
$$[a, b, c]$$
  - Simple Equation 09 With Offset
$$y = a * exp(pow(x - b, 2.0)/c) + Offset$$
$$[a, b, c, Offset]$$
- Simple Equation 10 (SimpleEquation\_10)
  - Simple Equation 10
$$y = a * exp(pow(ln(x) - b, 2.0)/c)$$
$$[a, b, c]$$
  - Simple Equation 10 With Offset
$$y = a * exp(pow(ln(x) - b, 2.0)/c) + Offset$$
$$[a, b, c, Offset]$$
- Simple Equation 13 (SimpleEquation\_13)
  - Simple Equation 13
$$y = a * pow(x/b, c) * exp(x/b)$$
$$[a, b, c]$$



- Simple Equation 13 With Offset
$$y = a * pow(x/b, c) * exp(x/b) + Offset$$

[a, b, c, Offset]
- Simple Equation 14 (SimpleEquation\_14)
  - Simple Equation 14
$$y = a * pow(x, b + c * x)$$

[a, b, c]
  - Simple Equation 14 With Offset
$$y = a * pow(x, b + c * x) + Offset$$

[a, b, c, Offset]
- Simple Equation 15 (SimpleEquation\_15)
  - Simple Equation 15
$$y = a * pow(x, b + c/x)$$

[a, b, c]
  - Simple Equation 15 With Offset
$$y = a * pow(x, b + c/x) + Offset$$

[a, b, c, Offset]
- Simple Equation 16 (SimpleEquation\_16)
  - Simple Equation 16
$$y = a * pow(x, b + c * ln(x))$$

[a, b, c]
  - Simple Equation 16 With Offset
$$y = a * pow(x, b + c * ln(x)) + Offset$$

[a, b, c, Offset]
- Simple Equation 17 (SimpleEquation\_17)
  - Simple Equation 17
$$y = a * pow(x, b * x + c * pow(x, 2.0))$$

[a, b, c]
  - Simple Equation 17 With Offset
$$y = a * pow(x, b * x + c * pow(x, 2.0)) + Offset$$

[a, b, c, Offset]
- Simple Equation 18 (SimpleEquation\_18)

- Simple Equation 18

$$y = a * \exp(b * x + c * \text{pow}(x, 0.5))$$

[a, b, c]

- Simple Equation 18 With Offset

$$y = a * \exp(b * x + c * \text{pow}(x, 0.5)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 19 (SimpleEquation\_19)

- Simple Equation 19

$$y = a * \exp(b/x + c * x)$$

[a, b, c]

- Simple Equation 19 With Offset

$$y = a * \exp(b/x + c * x) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 20 (SimpleEquation\_20)

- Simple Equation 20

$$y = (a + x)/(b + c * x)$$

[a, b, c]

- Simple Equation 20 With Offset

$$y = (a + x)/(b + c * x) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 21 (SimpleEquation\_21)

- Simple Equation 21

$$y = (a + x)/(b + c * \text{pow}(x, 2.0))$$

[a, b, c]

- Simple Equation 21 With Offset

$$y = (a + x)/(b + c * \text{pow}(x, 2.0)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 22 (SimpleEquation\_22)

- Simple Equation 22

$$y = a * (\exp(b * x) - \exp(c * x))$$

[a, b, c]

- Simple Equation 22 With Offset

$$y = a * (\exp(b * x) - \exp(c * x)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 23 (SimpleEquation\_23)

- Simple Equation 23

$$y = a * \exp(b * \exp(c * x))$$

[a, b, c]

- Simple Equation 23 With Offset

$$y = a * \exp(b * \exp(c * x)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 24 (SimpleEquation\_24)

- Simple Equation 24

$$y = a / (1.0 + b * \exp(c * x))$$

[a, b, c]

- Simple Equation 24 With Offset

$$y = a / (1.0 + b * \exp(c * x)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 25 (SimpleEquation\_25)

- Simple Equation 25

$$y = a / (b + \text{pow}(x, c))$$

[a, b, c]

- Simple Equation 25 With Offset

$$y = a / (b + \text{pow}(x, c)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 26 (SimpleEquation\_26)

- Simple Equation 26

$$y = a / \text{pow}(1.0 + b * \text{pow}(x, c), 2.0)$$

[a, b, c]

- Simple Equation 26 With Offset

$$y = a / \text{pow}(1.0 + b * \text{pow}(x, c), 2.0) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 27 (SimpleEquation\_27)

- Simple Equation 27
$$y = \text{pow}(a + b * x, c)$$
$$[a, b, c]$$
- Simple Equation 27 With Offset
$$y = \text{pow}(a + b * x, c) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Simple Equation 28 (SimpleEquation\_28)
  - Simple Equation 28
$$y = \exp(a + b/x + c * \ln(x))$$
$$[a, b, c]$$
  - Simple Equation 28 With Offset
$$y = \exp(a + b/x + c * \ln(x)) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Simple Equation 29 (SimpleEquation\_29)
  - Simple Equation 29
$$y = a * \exp(b * \text{pow}(x, c))$$
$$[a, b, c]$$
  - Simple Equation 29 With Offset
$$y = a * \exp(b * \text{pow}(x, c)) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Simple Equation 30 (SimpleEquation\_30)
  - Simple Equation 30
$$y = a * \text{pow}(x, b * \text{pow}(x, c))$$
$$[a, b, c]$$
  - Simple Equation 30 With Offset
$$y = a * \text{pow}(x, b * \text{pow}(x, c)) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Simple Equation 31 (SimpleEquation\_31)
  - Simple Equation 31
$$y = a * \ln(x + b)$$
$$[a, b]$$

- Simple Equation 31 With Offset
 
$$y = a * \ln(x + b) + \text{Offset}$$
 [a, b, Offset]
- Simple Equation 32 (SimpleEquation\_32)
  - Simple Equation 32
 
$$y = a/x + b * \text{pow}(x, c)$$
 [a, b, c]
  - Simple Equation 32 With Offset
 
$$y = a/x + b * \text{pow}(x, c) + \text{Offset}$$
 [a, b, c, Offset]
- Simple Equation 33 (SimpleEquation\_33)
  - Simple Equation 33
 
$$y = a/x + b * \exp(c/x)$$
 [a, b, c]
  - Simple Equation 33 With Offset
 
$$y = a/x + b * \exp(c/x) + \text{Offset}$$
 [a, b, c, Offset]
- Simple Equation 34 (SimpleEquation\_34)
  - Simple Equation 34
 
$$y = a/x + b * \exp(c * x)$$
 [a, b, c]
  - Simple Equation 34 With Offset
 
$$y = a/x + b * \exp(c * x) + \text{Offset}$$
 [a, b, c, Offset]
- Simple Equation 35 (SimpleEquation\_35)
  - Simple Equation 35
 
$$y = a * \exp(b * x)/x$$
 [a, b]
  - Simple Equation 35 With Offset
 
$$y = a * \exp(b * x)/x + \text{Offset}$$
 [a, b, Offset]
- Simple Equation 36 (SimpleEquation\_36)

- Simple Equation 36

$$y = a * \exp(b/x)/x$$

[a, b]

- Simple Equation 36 With Offset

$$y = a * \exp(b/x)/x + \text{Offset}$$

[a, b, Offset]

- Simple Equation 37 (SimpleEquation\_37)

- Simple Equation 37

$$y = a * \text{pow}(x, b) * \ln(x)$$

[a, b]

- Simple Equation 37 With Offset

$$y = a * \text{pow}(x, b) * \ln(x) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 38 (SimpleEquation\_38)

- Simple Equation 38

$$y = a * \text{pow}(x, b)/\ln(x)$$

[a, b]

- Simple Equation 38 With Offset

$$y = a * \text{pow}(x, b)/\ln(x) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 39 (SimpleEquation\_39)

- Simple Equation 39

$$y = a * \text{pow}(x, b) * \ln(x + c)$$

[a, b, c]

- Simple Equation 39 With Offset

$$y = a * \text{pow}(x, b) * \ln(x + c) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 40 (SimpleEquation\_40)

- Simple Equation 40

$$y = a * \text{pow}(\ln(x + b), c)$$

[a, b, c]

- Simple Equation 40 With Offset
$$y = a * pow(ln(x + b), c) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 41 (SimpleEquation\_41)
  - Simple Equation 41
$$y = a * pow(x, b/x) + c * x$$

[a, b, c]
  - Simple Equation 41 With Offset
$$y = a * pow(x, b/x) + c * x + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 42 (SimpleEquation\_42)
  - Simple Equation 42
$$y = a * pow(x, b/x) + c * ln(x)$$

[a, b, c]
  - Simple Equation 42 With Offset
$$y = a * pow(x, b/x) + c * ln(x) + \text{Offset}$$

[a, b, c, Offset]
- Simple Reciprocal (SimpleReciprocalA)
  - Simple Reciprocal
$$y = a/x$$

[a]
  - Simple Reciprocal With Offset
$$y = a/x + \text{Offset}$$

[a, Offset]

## 3.19 Spline

- Spline (Spline)
  - Spline
$$y = B - \text{SplineInterpolationCurve}$$

## 3.20 Trigonometric

- Great Circle [Degrees] (**GreatCircleDegrees**)
  - Great Circle [Degrees]
 
$$latitude = arctan(A * cos((B + longitude)/57.2957795131)) * 57.2957795131$$
 [A, B]
- Great Circle [radians] (**GreatCircleRadians**)
  - Great Circle [radians]
 
$$latitude = arctan(A * cos(B + longitude))$$
 [A, B]
- Hyperbolic Cosine [radians] (**HyperbolicCosine**)
  - Hyperbolic Cosine [radians]
 
$$y = amplitude * cosh(pi * (x - center)/width)$$
 [amplitude, center, width]
  - Hyperbolic Cosine [radians] With Offset
 
$$y = amplitude * cosh(pi * (x - center)/width) + Offset$$
 [amplitude, center, width, Offset]
- Hyperbolic Cosine [radians] (Nyquist Limited) (**HyperbolicCosine\_NyquistLimited**)
  - Hyperbolic Cosine [radians] (Nyquist Limited)
 
$$y = amplitude * cosh(pi * (x - center)/width)$$
 [amplitude, center, width]
  - Hyperbolic Cosine [radians] (Nyquist Limited) With Offset
 
$$y = amplitude * cosh(pi * (x - center)/width) + Offset$$
 [amplitude, center, width, Offset]
- Cardinal Sine (sinc) [radians] (**Sinc**)
  - Cardinal Sine (sinc) [radians]
 
$$y = amplitude * sin(pi * (x - center)/width) / (pi * (x - center)/width)$$
 [amplitude, center, width]
  - Cardinal Sine (sinc) [radians] With Offset
 
$$y = amplitude * sin(pi * (x - center)/width) / (pi * (x - center)/width) + Offset$$
 [amplitude, center, width, Offset]
- Cardinal Sine (sinc) Squared [radians] (**SincSquared**)



- Cardinal Sine (sinc) Squared [radians]  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2 / (\pi * (x - \text{center}) / \text{width})$$
  
[amplitude, center, width]
- Cardinal Sine (sinc) Squared [radians] With Offset  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2 / (\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
  
[amplitude, center, width, Offset]
- Cardinal Sine (sinc) Squared [radians] (Nyquist Limited) (SincSquared\_NyquistLimited)
  - Cardinal Sine (sinc) Squared [radians] (Nyquist Limited)  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2 / (\pi * (x - \text{center}) / \text{width})$$
  
[amplitude, center, width]
  - Cardinal Sine (sinc) Squared [radians] (Nyquist Limited) With Offset  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2 / (\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
  
[amplitude, center, width, Offset]
- Cardinal Sine (sinc) [radians] (Nyquist Limited) (Sinc\_NyquistLimited)
  - Cardinal Sine (sinc) [radians] (Nyquist Limited)  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width}) / (\pi * (x - \text{center}) / \text{width})$$
  
[amplitude, center, width]
  - Cardinal Sine (sinc) [radians] (Nyquist Limited) With Offset  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width}) / (\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
  
[amplitude, center, width, Offset]
- Sine [radians] (Sine)
  - Sine [radians]  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})$$
  
[amplitude, center, width]
  - Sine [radians] With Offset  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
  
[amplitude, center, width, Offset]
- Sine Squared [radians] (SineSquared)
  - Sine Squared [radians]  
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2$$
  
[amplitude, center, width]

- Sine Squared [radians] With Offset
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2 + \text{Offset}$$
[amplitude, center, width, Offset]
- Sine Squared [radians] (Nyquist Limited) (SineSquared\_NyquistLimited)
  - Sine Squared [radians] (Nyquist Limited)
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2$$
[amplitude, center, width]
  - Sine Squared [radians] (Nyquist Limited) With Offset
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})^2 + \text{Offset}$$
[amplitude, center, width, Offset]
- Sine [radians] (Nyquist Limited) (Sine\_NyquistLimited)
  - Sine [radians] (Nyquist Limited)
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width})$$
[amplitude, center, width]
  - Sine [radians] (Nyquist Limited) With Offset
$$y = \text{amplitude} * \sin(\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
[amplitude, center, width, Offset]
- Tangent [radians] (Tangent)
  - Tangent [radians]
$$y = \text{amplitude} * \tan(\pi * (x - \text{center}) / \text{width})$$
[amplitude, center, width]
  - Tangent [radians] With Offset
$$y = \text{amplitude} * \tan(\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
[amplitude, center, width, Offset]
- Tangent [radians] (Nyquist Limited) (Tangent\_NyquistLimited)
  - Tangent [radians] (Nyquist Limited)
$$y = \text{amplitude} * \tan(\pi * (x - \text{center}) / \text{width})$$
[amplitude, center, width]
  - Tangent [radians] (Nyquist Limited) With Offset
$$y = \text{amplitude} * \tan(\pi * (x - \text{center}) / \text{width}) + \text{Offset}$$
[amplitude, center, width, Offset]

## 3.21 UserDefinedFunction

- User Defined Function (UserDefinedFunction)

- User Defined Function

$$y = UserDefinedFunction$$

## 3.22 YieldDensity

- Bleasdale (Bleasdale)

- Bleasdale

$$y = 1.0/(a + bx)^{(-1.0/c)}$$

[a, b, c]

- Bleasdale With Offset

$$y = 1.0/(a + bx)^{(-1.0/c)} + \text{Offset}$$

[a, b, c, Offset]

- Extended Holliday (ExtendedHolliday)

- Extended Holliday

$$y = a/(a + bx + cx^2)$$

[a, b, c]

- Extended Holliday With Offset

$$y = a/(a + bx + cx^2) + \text{Offset}$$

[a, b, c, Offset]

- Harris (Harris)

- Harris

$$y = 1.0/(a + bx^c)$$

[a, b, c]

- Harris With Offset

$$y = 1.0/(a + bx^c) + \text{Offset}$$

[a, b, c, Offset]

- Holliday (Holliday)

- Holliday

$$y = 1.0/(a + bx + cx^2)$$

[a, b, c]

- Holliday With Offset

$$y = 1.0 / (a + bx + cx^2) + \text{Offset}$$

[a, b, c, Offset]

- Inverse Bleasdale (InverseBleasdale)

- Inverse Bleasdale

$$y = x / (a + bx)^{(-1.0/c)}$$

[a, b, c]

- Inverse Bleasdale With Offset

$$y = x / (a + bx)^{(-1.0/c)} + \text{Offset}$$

[a, b, c, Offset]

- InverseHarris (InverseHarris)

- InverseHarris

$$y = x / (a + bx^c)$$

[a, b, c]

- InverseHarris With Offset

$$y = x / (a + bx^c) + \text{Offset}$$

[a, b, c, Offset]

- Nelder (Nelder)

- Nelder

$$y = (a + x) / (b + c(a + x) + d(a + x)^2)$$

[a, b, c, d]

- Nelder With Offset

$$y = (a + x) / (b + c(a + x) + d(a + x)^2) + \text{Offset}$$

[a, b, c, d, Offset]



## 3D MODELS

### 4.1 BioScience

- Chen-Clayton (**ChenClayton**)
  - Chen-Clayton
$$r.h.(T_k, M) = \exp(-(C1/T^{C2}) * \exp(-C3 * T^{C4} * M))$$
$$[C1, C2, C3, C4]$$
  - Chen-Clayton With Offset
$$r.h.(T_k, M) = \exp(-(C1/T^{C2}) * \exp(-C3 * T^{C4} * M)) + \text{Offset}$$
$$[C1, C2, C3, C4, \text{Offset}]$$
- Chen-Clayton Scaled (**ChenClayton\_scaled**)
  - Chen-Clayton Scaled
$$z = \text{Scale} * \exp(-(C1/T^{C2}) * \exp(-C3 * T^{C4} * M))$$
$$[C1, C2, C3, C4, \text{Scale}]$$
  - Chen-Clayton Scaled With Offset
$$z = \text{Scale} * \exp(-(C1/T^{C2}) * \exp(-C3 * T^{C4} * M)) + \text{Offset}$$
$$[C1, C2, C3, C4, \text{Scale}, \text{Offset}]$$
- High-Low Affinity Double Isotope Displacement (y = [Hot]) (**HighLowAffinityDoubleIsotopeDisplacement**)
  - High-Low Affinity Double Isotope Displacement (y = [Hot])
$$z = aby/(1 + b(x + y)) + cdy/(1 + d(x + y))$$
$$[a, b, c, d]$$
  - High-Low Affinity Double Isotope Displacement (y = [Hot]) With Offset
$$z = aby/(1 + b(x + y)) + cdy/(1 + d(x + y)) + \text{Offset}$$
$$[a, b, c, d, \text{Offset}]$$

- High-Low Affinity Isotope Displacement (y = [Hot]) (`HighLowAffinityIsotopeDisplacement`)
  - High-Low Affinity Isotope Displacement (y = [Hot])
 
$$z = aby / (1 + b(x + y))$$

[a, b]
  - High-Low Affinity Isotope Displacement (y = [Hot]) With Offset
 
$$z = aby / (1 + b(x + y)) + \text{Offset}$$

[a, b, Offset]
- Logistic Growth (`LogisticGrowth`)
  - Logistic Growth
 
$$z = a / (1 + \exp(-(b + cx + dy + fxy))) + g$$

[a, b, c, d, f, g]
- Michaelis-Menten Double Isotope Displacement (y = [Hot]) (`MichaelisMentenDoubleIsotopeDisplacement`)
  - Michaelis-Menten Double Isotope Displacement (y = [Hot])
 
$$z = ay / (b + x + y) + cy / (d + x + y)$$

[a, b, c, d]
  - Michaelis-Menten Double Isotope Displacement (y = [Hot]) With Offset
 
$$z = ay / (b + x + y) + cy / (d + x + y) + \text{Offset}$$

[a, b, c, d, Offset]
- Michaelis-Menten Isotope Displacement (y = [Hot]) (`MichaelisMentenIsotopeDisplacement`)
  - Michaelis-Menten Isotope Displacement (y = [Hot])
 
$$z = ay / (b + x + y)$$

[a, b]
  - Michaelis-Menten Isotope Displacement (y = [Hot]) With Offset
 
$$z = ay / (b + x + y) + \text{Offset}$$

[a, b, Offset]
- Modified Chung-Pfost (`ModifiedChungPfost`)
  - Modified Chung-Pfost
 
$$r.h.(T, M) = \exp(-(C1 / (T + C2)) * \exp(-C3 * M))$$

[C1, C2, C3]
  - Modified Chung-Pfost With Offset
 
$$r.h.(T, M) = \exp(-(C1 / (T + C2)) * \exp(-C3 * M)) + \text{Offset}$$

[C1, C2, C3, Offset]

- Modified Halsey (**ModifiedHalsey**)

- Modified Halsey

$$r.h.(T, M) = \exp(-\exp(C1 + C2 * T) * M^{-C3})$$

[C1, C2, C3]

- Modified Halsey With Offset

$$r.h.(T, M) = \exp(-\exp(C1 + C2 * T) * M^{-C3}) + \text{Offset}$$

[C1, C2, C3, Offset]

- Modified Halsey Scaled (**ModifiedHalsey\_scaled**)

- Modified Halsey Scaled

$$z = \text{Scale} * \exp(-\exp(C1 + C2 * T) * M^{-C3})$$

[C1, C2, C3, Scale]

- Modified Halsey Scaled With Offset

$$z = \text{Scale} * \exp(-\exp(C1 + C2 * T) * M^{-C3}) + \text{Offset}$$

[C1, C2, C3, Scale, Offset]

- Modified Henderson (**ModifiedHenderson**)

- Modified Henderson

$$r.h.(T, M) = 1 - \exp(-C1 * (T + C2) * M^{C3})$$

[C1, C2, C3]

- Modified Henderson With Offset

$$r.h.(T, M) = 1 - \exp(-C1 * (T + C2) * M^{C3}) + \text{Offset}$$

[C1, C2, C3, Offset]

- Strohman-Yoerger (**StrohmanYoerger**)

- Strohman-Yoerger

$$r.h.(P_s, M) = \exp(C1 * \exp(-C2 * M) * \ln(P_s) - C3 * \exp(-C4 * M))$$

[C1, C2, C3, C4]

- Strohman-Yoerger With Offset

$$r.h.(P_s, M) = \exp(C1 * \exp(-C2 * M) * \ln(P_s) - C3 * \exp(-C4 * M)) + \text{Offset}$$

[C1, C2, C3, C4, Offset]



## 4.2 EnzymeKinetics

- Competitive Inhibition A (`CompetitiveInhibitionA`)
  - Competitive Inhibition A
$$z = ax / (b(1 + y/c) + x)$$
$$[a, b, c]$$
  - Competitive Inhibition A With Offset
$$z = ax / (b(1 + y/c) + x) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Competitive Inhibition B (`CompetitiveInhibitionB`)
  - Competitive Inhibition B
$$z = ay / (b(1 + x/c) + y)$$
$$[a, b, c]$$
  - Competitive Inhibition B With Offset
$$z = ay / (b(1 + x/c) + y) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Competitive Inhibition C (`CompetitiveInhibitionC`)
  - Competitive Inhibition C
$$z = axy / (b(1 + x/c) + y)$$
$$[a, b, c]$$
  - Competitive Inhibition C With Offset
$$z = axy / (b(1 + x/c) + y) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Inhibition By Competing Substrate A (`InhibitionByCompetingSubstrateA`)
  - Inhibition By Competing Substrate A
$$z = (ax/b) / (1 + x/b + y/c)$$
$$[a, b, c]$$
  - Inhibition By Competing Substrate A With Offset
$$z = (ax/b) / (1 + x/b + y/c) + \text{Offset}$$
$$[a, b, c, \text{Offset}]$$
- Inhibition By Competing Substrate B (`InhibitionByCompetingSubstrateB`)

- Inhibition By Competing Substrate B

$$z = (ay/b)/(1 + y/b + x/c)$$

[a, b, c]

- Inhibition By Competing Substrate B With Offset

$$z = (ay/b)/(1 + y/b + x/c) + \text{Offset}$$

[a, b, c, Offset]

- Inhibition By Competing Substrate C (`InhibitionByCompetingSubstrateC`)

- Inhibition By Competing Substrate C

$$z = (axy/b)/(1 + y/b + x/c)$$

[a, b, c]

- Inhibition By Competing Substrate C With Offset

$$z = (axy/b)/(1 + y/b + x/c) + \text{Offset}$$

[a, b, c, Offset]

- Michaelis Menten Product Inhibition (`MichaelisMentenProductInhibition`)

- Michaelis Menten Product Inhibition

$$z = (ax/b - cy/d)/(1 + x/b + y/d)$$

[a, b, c, d]

- Michaelis Menten Product Inhibition With Offset

$$z = (ax/b - cy/d)/(1 + x/b + y/d) + \text{Offset}$$

[a, b, c, d, Offset]

- Mixed Inhibition A (`MixedInhibitionA`)

- Mixed Inhibition A

$$z = ax/(b(1 + y/c) + x(1 + y/d))$$

[a, b, c, d]

- Mixed Inhibition A With Offset

$$z = ax/(b(1 + y/c) + x(1 + y/d)) + \text{Offset}$$

[a, b, c, d, Offset]

- Mixed Inhibition B (`MixedInhibitionB`)

- Mixed Inhibition B

$$z = ay/(b(1 + x/c) + y(1 + x/d))$$

[a, b, c, d]

- Mixed Inhibition B With Offset

$$z = ay / (b(1 + x/c) + y(1 + x/d)) + \text{Offset}$$

[a, b, c, d, Offset]

- Noncompetitive Inhibition A (NoncompetitiveInhibitionA)

- Noncompetitive Inhibition A

$$z = ax / ((b + x)(1 + y/c))$$

[a, b, c]

- Noncompetitive Inhibition A With Offset

$$z = ax / ((b + x)(1 + y/c)) + \text{Offset}$$

[a, b, c, Offset]

- Noncompetitive Inhibition B (NoncompetitiveInhibitionB)

- Noncompetitive Inhibition B

$$z = ay / ((b + y)(1 + x/c))$$

[a, b, c]

- Noncompetitive Inhibition B With Offset

$$z = ay / ((b + y)(1 + x/c)) + \text{Offset}$$

[a, b, c, Offset]

- Ping Pong Bi Bi A (PingPongBiBiA)

- Ping Pong Bi Bi A

$$z = ax / (bx + cy + xy)$$

[a, b, c]

- Ping Pong Bi Bi A With Offset

$$z = ax / (bx + cy + xy) + \text{Offset}$$

[a, b, c, Offset]

- Ping Pong Bi Bi B (PingPongBiBiB)

- Ping Pong Bi Bi B

$$z = ay / (by + cx + xy)$$

[a, b, c]

- Ping Pong Bi Bi B With Offset

$$z = ay / (by + cx + xy) + \text{Offset}$$

[a, b, c, Offset]

- Ping Pong Bi Bi C (PingPongBiBiC)

- Ping Pong Bi Bi C

$$z = axy / (by + cx + xy)$$

[a, b, c]

- Ping Pong Bi Bi C With Offset

$$z = axy / (by + cx + xy) + \text{Offset}$$

[a, b, c, Offset]

- Uncompetitive Inhibition A (UncompetitiveInhibitionA)

- Uncompetitive Inhibition A

$$z = ax / (b + x(1 + y/c))$$

[a, b, c]

- Uncompetitive Inhibition A With Offset

$$z = ax / (b + x(1 + y/c)) + \text{Offset}$$

[a, b, c, Offset]

- Uncompetitive Inhibition B (UncompetitiveInhibitionB)

- Uncompetitive Inhibition B

$$z = ay / (b + y(1 + x/c))$$

[a, b, c]

- Uncompetitive Inhibition B With Offset

$$z = ay / (b + y(1 + x/c)) + \text{Offset}$$

[a, b, c, Offset]

## 4.3 Exponential

- Full Cubic Exponential (FullCubicExponential)

- Full Cubic Exponential

$$z = a + b * \exp(x) + c * \exp(y) + d * \exp(x)^2 + f * \exp(y)^2 + g * \exp(x)^3 + h * \exp(y)^3 + i * \exp(x) * \exp(y) + j * \exp(x)^2 * \exp(y) + k * \exp(x) * \exp(y)^2$$

[a, b, c, d, f, g, h, i, j, k]

- Transform Full Cubic Exponential (FullCubicExponentialTransform)

- Transform Full Cubic Exponential

$$z = a + b * \exp(m * x + n) + c * \exp(o * y + p) + d * \exp(m * x + n)^2 + f * \exp(o * y + p)^2 + g * \exp(m * x + n)^3 + h * \exp(o * y + p)^3 + i * \exp(m * x + n) * \exp(o * y + p) + j * \exp(m * x + n)^2 * \exp(o * y + p) + k * \exp(m * x + n) * \exp(o * y + p)^2$$

[a, b, c, d, f, g, h, i, j, k, m, n, o, p]

- Full Quadratic Exponential (FullQuadraticExponential)

- Full Quadratic Exponential

$$z = a + b * \exp(x) + c * \exp(y) + d * \exp(x)^2 + f * \exp(y)^2 + g * \exp(x) * \exp(y)$$

[a, b, c, d, f, g]

- Transform Full Quadratic Exponential (FullQuadraticExponentialTransform)

- Transform Full Quadratic Exponential

$$z = a + b * \exp(h * x + i) + c * \exp(j * y + k) + d * \exp(h * x + i)^2 + e * \exp(j * y + k)^2 + f * \exp(h * x + i) * \exp(j * y + k)$$

[a, b, c, d, f, g, h, i, j, k]

- Linear Exponential (LinearExponential)

- Linear Exponential

$$z = a + b * \exp(x) + c * \exp(y)$$

[a, b, c]

- Transform Linear Exponential (LinearExponentialTransform)

- Transform Linear Exponential

$$z = a + b * \exp(d * x + f) + c * \exp(g * y + h)$$

[a, b, c, d, f, g, h]

- Simplified Cubic Exponential (SimplifiedCubicExponential)

- Simplified Cubic Exponential

$$z = a + b * \exp(x) + c * \exp(y) + d * \exp(x)^2 + e * \exp(y)^2 + f * \exp(x)^3 + g * \exp(y)^3$$

[a, b, c, d, f, g, h]

- Transform Simplified Cubic Exponential (SimplifiedCubicExponentialTransform)

- Transform Simplified Cubic Exponential

$$z = a + b * \exp(i * x + j) + c * \exp(k * y + m) + d * \exp(i * x + j)^2 + f * \exp(k * y + m)^2 + g * \exp(i * x + j)^3 + h * \exp(k * y + m)^3$$

[a, b, c, d, f, g, h, i, j, k, m]

- Simplified Quadratic Exponential (SimplifiedQuadraticExponential)

- Simplified Quadratic Exponential

$$z = a + b * \exp(x) + c * \exp(y) + d * \exp(x)^2 + f * \exp(y)^2$$

[a, b, c, d, f]

- Transform Simplified Quadratic Exponential (SimplifiedQuadraticExponentialTransform)

- Transform Simplified Quadratic Exponential

$$z = a + b * \exp(g * x + h) + c * \exp(i * y + j) + d * \exp(g * x + h)^2 + f * \exp(i * y + j)^2$$

[a, b, c, d, f, g, h, i, j]

## 4.4 Logarithmic

- Full Cubic Logarithmic (FullCubicLogarithmic)

- Full Cubic Logarithmic

$$z = a + b * \ln(x) + c * \ln(y) + d * \ln(x)^2 + f * \ln(y)^2 + g * \ln(x)^3 + h * \ln(y)^3 + i * \ln(x) * \ln(y) + j * \ln(x)^2 * \ln(y) + k * \ln(x) * \ln(y)^2$$

[a, b, c, d, f, g, h, i, j, k]

- Transform Full Cubic Logarithmic (FullCubicLogarithmicTransform)

- Transform Full Cubic Logarithmic

$$z = a + b * \ln(m * x + n) + c * \ln(o * y + p) + d * \ln(m * x + n)^2 + f * \ln(o * y + p)^2 + g * \ln(m * x + n)^3 + h * \ln(o * y + p)^3 + i * \ln(m * x + n) * \ln(o * y + p) + j * \ln(m * x + n)^2 * \ln(o * y + p) + k * \ln(m * x + n) * \ln(o * y + p)^2$$

[a, b, c, d, f, g, h, i, j, k, m, n, o, p]

- Full Quadratic Logarithmic (FullQuadraticLogarithmic)

- Full Quadratic Logarithmic

$$z = a + b * \ln(x) + c * \ln(y) + d * \ln(x)^2 + f * \ln(y)^2 + g * \ln(x) * \ln(y)$$

[a, b, c, d, f, g]

- Transform Full Quadratic Logarithmic (FullQuadraticLogarithmicTransform)

- Transform Full Quadratic Logarithmic

$$z = a + b * \ln(h * x + i) + c * \ln(j * y + k) + d * \ln(h * x + i)^2 + f * \ln(j * y + k)^2 + g * \ln(h * x + i) * \ln(j * y + k)$$

[a, b, c, d, f, g, h, i, j, k]

- Linear Logarithmic (LinearLogarithmic)

- Linear Logarithmic

$$z = a + b * \ln(x) + c * \ln(y)$$

[a, b, c]

- Transform Linear Logarithmic (LinearLogarithmicTransform)

- Transform Linear Logarithmic

$$z = a + b * \ln(d * x + f) + c * \ln(g * y + h)$$

[a, b, c, d, f, g, h]

- Simplified Cubic Logarithmic (SimplifiedCubicLogarithmic)

- Simplified Cubic Logarithmic

$$z = a + b * \ln(x) + c * \ln(y) + d * \ln(x)^2 + f * \ln(y)^2 + g * \ln(x)^3 + h * \ln(y)^3$$

[a, b, c, d, f, g, h]

- Transform Simplified Cubic Logarithmic (SimplifiedCubicLogarithmicTransform)

- Transform Simplified Cubic Logarithmic

$$z = a + b * \ln(i * x + j) + c * \ln(k * y + m) + d * \ln(i * x + j)^2 + f * \ln(k * y + m)^2 + g * \ln(i * x + j)^3 + h * \ln(k * y + m)^3$$

[a, b, c, d, f, g, h, i, j, k, m]

- Simplified Quadratic Logarithmic (SimplifiedQuadraticLogarithmic)

- Simplified Quadratic Logarithmic

$$z = a + b * \ln(x) + c * \ln(y) + d * \ln(x)^2 + f * \ln(y)^2$$

[a, b, c, d, f]

- Transform Simplified Quadratic Logarithmic (SimplifiedQuadraticLogarithmicTransform)

- Transform Simplified Quadratic Logarithmic

$$z = a + b * \ln(g * x + h) + c * \ln(i * y + j) + d * \ln(g * x + h)^2 + f * \ln(i * y + j)^2$$

[a, b, c, d, f, g, h, i, j]

## 4.5 Miscellaneous

- Gary Cler's Custom Equation Transform (GaryCler\_Transform)

- Gary Cler's Custom Equation Transform

$$z = a * (dx + f)^b * (gy + h)^c$$

[a, b, c, d, f, g, h]

- Gary Cler's Custom Equation Transform With Offset

$$z = a * (dx + f)^b * (gy + h)^c + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Gaussian Curvature Of Paraboloid (GaussianCurvatureOfParaboloid)

- Gaussian Curvature Of Paraboloid

$$z = 4a^2 / (1 + 4a^2 * (x^2 + y^2))^2$$

[a]

- Gaussian Curvature Of Paraboloid With Offset
 
$$z = 4a^2 / (1 + 4a^2 * (x^2 + y^2))^2 + \text{Offset}$$
 [a, Offset]
- Gaussian Curvature Of Paraboloid Scaled (GaussianCurvatureOfParaboloid\_scaled)
  - Gaussian Curvature Of Paraboloid Scaled
 
$$z = \text{Scale} * 4a^2 / (1 + 4a^2 * (x^2 + y^2))^2$$
 [a, Scale]
  - Gaussian Curvature Of Paraboloid Scaled With Offset
 
$$z = \text{Scale} * 4a^2 / (1 + 4a^2 * (x^2 + y^2))^2 + \text{Offset}$$
 [a, Scale, Offset]
- Gaussian Curvature Of Richmond’s Minimal Surface (GaussianCurvatureOfRichmondsMinimalSurface)
  - Gaussian Curvature Of Richmond’s Minimal Surface
 
$$z = -1.0 * a * (x^2 + y^2)^3 / (b + (x^2 + y^2)^2)^4$$
 [a, b]
  - Gaussian Curvature Of Richmond’s Minimal Surface With Offset
 
$$z = -1.0 * a * (x^2 + y^2)^3 / (b + (x^2 + y^2)^2)^4 + \text{Offset}$$
 [a, b, Offset]
- Gaussian Curvature Of Whitney’s Umbrella A (GaussianCurvatureOfWhitneysUmbrellaA)
  - Gaussian Curvature Of Whitney’s Umbrella A
 
$$z = -1.0 * a * y^2 / (x^2 + a * (y^2 + y^4))^2$$
 [a]
  - Gaussian Curvature Of Whitney’s Umbrella A With Offset
 
$$z = -1.0 * a * y^2 / (x^2 + a * (y^2 + y^4))^2 + \text{Offset}$$
 [a, Offset]
- Gaussian Curvature Of Whitney’s Umbrella B (GaussianCurvatureOfWhitneysUmbrellaB)
  - Gaussian Curvature Of Whitney’s Umbrella B
 
$$z = -1.0 * a * x^2 / (y^2 + a * (x^2 + x^4))^2$$
 [a]
  - Gaussian Curvature Of Whitney’s Umbrella B With Offset
 
$$z = -1.0 * a * x^2 / (y^2 + a * (x^2 + x^4))^2 + \text{Offset}$$
 [a, Offset]
- Liping Zheng’s core loss coefficients (LipingZheng)



- Liping Zheng’s core loss coefficients
$$z = ax^2y + bx^2y^2 + cx^{1.5}y^{1.5}$$

[a, b, c]
- Liping Zheng’s core loss coefficients With Offset
$$z = ax^2y + bx^2y^2 + cx^{1.5}y^{1.5} + \text{Offset}$$

[a, b, c, Offset]
- Mean Curvature Of Paraboloid (MeanCurvatureOfParaboloid)
  - Mean Curvature Of Paraboloid
$$z = 2 * (a + 2a^3 * (x^2 + y^2)) / (1 + 4a^2 * (x^2 + y^2))^{1.5}$$

[a]
  - Mean Curvature Of Paraboloid With Offset
$$z = 2 * (a + 2a^3 * (x^2 + y^2)) / (1 + 4a^2 * (x^2 + y^2))^{1.5} + \text{Offset}$$

[a, Offset]
- Mean Curvature Of Paraboloid Scaled (MeanCurvatureOfParaboloid\_scaled)
  - Mean Curvature Of Paraboloid Scaled
$$z = \text{Scale} * (a + 2a^3 * (x^2 + y^2)) / (1 + 4a^2 * (x^2 + y^2))^{1.5}$$

[a, Scale]
  - Mean Curvature Of Paraboloid Scaled With Offset
$$z = \text{Scale} * (a + 2a^3 * (x^2 + y^2)) / (1 + 4a^2 * (x^2 + y^2))^{1.5} + \text{Offset}$$

[a, Scale, Offset]
- Mean Curvature Of Whitney’s Umbrella A (MeanCurvatureOfWhitneysUmbrellaA)
  - Mean Curvature Of Whitney’s Umbrella A
$$z = -1.0 * x * (a + b * y^2) / (x^2 + a * (y^2 + y^4))^{1.5}$$

[a, b]
  - Mean Curvature Of Whitney’s Umbrella A With Offset
$$z = -1.0 * x * (a + b * y^2) / (x^2 + a * (y^2 + y^4))^{1.5} + \text{Offset}$$

[a, b, Offset]
- Mean Curvature Of Whitney’s Umbrella B (MeanCurvatureOfWhitneysUmbrellaB)
  - Mean Curvature Of Whitney’s Umbrella B
$$z = -1.0 * y * (a + b * x^2) / (y^2 + a * (x^2 + x^4))^{1.5}$$

[a, b]

- Mean Curvature Of Whitney’s Umbrella B With Offset
$$z = -1.0 * y * (a + b * x^2) / (y^2 + a * (x^2 + x^4))^{1.5} + \text{Offset}$$

[a, b, Offset]
- Menn’s Surface A (MennSurfaceA)
  - Menn’s Surface A
$$z = ax^4 + bx^2y - cy^2$$

[a, b, c]
  - Menn’s Surface A With Offset
$$z = ax^4 + bx^2y - cy^2 + \text{Offset}$$

[a, b, c, Offset]
- Menn’s Surface B (MennSurfaceB)
  - Menn’s Surface B
$$z = ay^4 + by^2x - cx^2$$

[a, b, c]
  - Menn’s Surface B With Offset
$$z = ay^4 + by^2x - cx^2 + \text{Offset}$$

[a, b, c, Offset]
- Monkey Saddle A (MonkeySaddleA)
  - Monkey Saddle A
$$z = ax^3 - bxy^2$$

[a, b]
  - Monkey Saddle A With Offset
$$z = ax^3 - bxy^2 + \text{Offset}$$

[a, b, Offset]
- Monkey Saddle B (MonkeySaddleB)
  - Monkey Saddle B
$$z = ay^3 - byx^2$$

[a, b]
  - Monkey Saddle B With Offset
$$z = ay^3 - byx^2 + \text{Offset}$$

[a, b, Offset]
- Monkey Saddle Transform A (MonkeySaddle\_TransformA)

- Monkey Saddle Transform A
$$z = a(cx + d)^3 - b(cx + d)(fy + g)^2$$

[a, b, c, d, f, g]
- Monkey Saddle Transform A With Offset
$$z = a(cx + d)^3 - b(cx + d)(fy + g)^2 + \text{Offset}$$

[a, b, c, d, f, g, Offset]
- Monkey Saddle Transform B (MonkeySaddle\_TransformB)
  - Monkey Saddle Transform B
$$z = a(cy + d)^3 - b(cy + d)(fx + g)^2$$

[a, b, c, d, f, g]
  - Monkey Saddle Transform B With Offset
$$z = a(cy + d)^3 - b(cy + d)(fx + g)^2 + \text{Offset}$$

[a, b, c, d, f, g, Offset]
- Paraboloid (Paraboloid)
  - Paraboloid
$$z = a * (x^2 + y^2)$$

[a]
  - Paraboloid With Offset
$$z = a * (x^2 + y^2) + \text{Offset}$$

[a, Offset]
- Paraboloid Transform (Paraboloid\_Transform)
  - Paraboloid Transform
$$z = a * ((bx + c)^2 + (dy + f)^2)$$

[a, b, c, d, f]
  - Paraboloid Transform With Offset
$$z = a * ((bx + c)^2 + (dy + f)^2) + \text{Offset}$$

[a, b, c, d, f, Offset]
- Paschen's Law for Breakdown Field Strength (PaschensBreakdownFieldStrengthLaw)
  - Paschen's Law for Breakdown Field Strength
$$E_{\text{breakdown}} = \text{pressure} * (a / (\ln(\text{pressure} * \text{distance}) + b))$$

[a, b]

- Paschen’s Law for Breakdown Field Strength With Offset
$$E_{breakdown} = pressure * (a / (\ln(pressure * distance) + b)) + Offset$$
[a, b, Offset]
- Paschen’s Law for Breakdown Voltage (`PaschensBreakdownVoltageLaw`)
  - Paschen’s Law for Breakdown Voltage
$$V_{breakdown} = a(pressure * distance) / (\ln(pressure * distance) + b)$$
[a, b]
  - Paschen’s Law for Breakdown Voltage With Offset
$$V_{breakdown} = a(pressure * distance) / (\ln(pressure * distance) + b) + Offset$$
[a, b, Offset]
- Rex Kelfkens’ Custom Equation (`RexKelfkens`)
  - Rex Kelfkens’ Custom Equation
$$z = \exp(A + B * \ln(x) + C * \ln(y))$$
[A, B, C]
  - Rex Kelfkens’ Custom Equation With Offset
$$z = \exp(A + B * \ln(x) + C * \ln(y)) + Offset$$
[A, B, C, Offset]
- Rex Kelfkens’ Custom Equation Transform (`RexKelfkensTransform`)
  - Rex Kelfkens’ Custom Equation Transform
$$z = \exp(A + B * \ln(x * xscale + xoffset) + C * \ln(y * yscale + yoffset))$$
[A, B, C, xscale, xoffset, yscale, yoffset]
  - Rex Kelfkens’ Custom Equation Transform With Offset
$$z = \exp(A + B * \ln(x * xscale + xoffset) + C * \ln(y * yscale + yoffset)) + Offset$$
[A, B, C, xscale, xoffset, yscale, yoffset, Offset]

## 4.6 NIST

- NIST Nelson (`NIST_Nelson`)
  - NIST Nelson
$$\log(y) = b1 - b2 * X1 * \exp(-b3 * X2)$$
[b1, b2, b3]
- NIST Nelson Autolog (`NIST_NelsonAutolog`)

- NIST Nelson Autolog
$$z = \exp(b1 - b2 * x * \exp(-b3 * y))$$
$$[b1, b2, b3]$$
- NIST Nelson Autolog With Offset
$$z = \exp(b1 - b2 * x * \exp(-b3 * y)) + \text{Offset}$$
$$[b1, b2, b3, \text{Offset}]$$

## 4.7 Optical

- Sag For Asphere 0 (SagForAsphere0)
  - Sag For Asphere 0
$$s^2 = x^2 + y^2$$
$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2})$$
$$[k, r]$$
  - Sag For Asphere 0 With Offset
$$s^2 = x^2 + y^2$$
$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + \text{Offset}$$
$$[k, r, \text{Offset}]$$
- Sag For Asphere 0 Borisovsky (SagForAsphere0\_Borisovsky)
  - Sag For Asphere 0 Borisovsky
$$s^2 = (x - a)^2 + (y - b)^2$$
$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + \text{offset}$$
$$[a, b, k, r, \text{offset}]$$
  - Sag For Asphere 0 Borisovsky With Offset
$$s^2 = (x - a)^2 + (y - b)^2$$
$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + \text{offset} + \text{Offset}$$
$$[a, b, k, r, \text{offset}, \text{Offset}]$$
- Transform Sag For Asphere 0 (SagForAsphere0\_Transform)
  - Transform Sag For Asphere 0
$$s^2 = (ax + b)^2 + (cy + d)^2$$
$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2})$$
$$[k, r, a, b, c, d]$$

- Transform Sag For Asphere 0 With Offset

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + \text{Offset}$$

[k, r, a, b, c, d, Offset]

- Sag For Asphere 0 Scaled (SagForAsphere0\_scaled)

- Sag For Asphere 0 Scaled

$$s^2 = x^2 + y^2$$

$$z = \text{Scale} * (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2})$$

[k, r, Scale]

- Sag For Asphere 0 Scaled With Offset

$$s^2 = x^2 + y^2$$

$$z = \text{Scale} * (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + \text{Offset}$$

[k, r, Scale, Offset]

- Sag For Asphere 1 (SagForAsphere1)

- Sag For Asphere 1

$$s^2 = x^2 + y^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4$$

[k, r, A4]

- Sag For Asphere 1 With Offset

$$s^2 = x^2 + y^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + \text{Offset}$$

[k, r, A4, Offset]

- Transform Sag For Asphere 1 (SagForAsphere1\_Transform)

- Transform Sag For Asphere 1

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4$$

[k, r, A4, a, b, c, d]

- Transform Sag For Asphere 1 With Offset

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + \text{Offset}$$

[k, r, A4, a, b, c, d, Offset]

- Sag For Asphere 2 (SagForAsphere2)

- Sag For Asphere 2

$$s^2 = x^2 + y^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6$$

[k, r, A4, A6]

- Sag For Asphere 2 With Offset

$$s^2 = x^2 + y^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6 + \text{Offset}$$

[k, r, A4, A6, Offset]

- Transform Sag For Asphere 2 (SagForAsphere2\_Transform)

- Transform Sag For Asphere 2

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6$$

[k, r, A4, A6, a, b, c, d]

- Transform Sag For Asphere 2 With Offset

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6 + \text{Offset}$$

[k, r, A4, A6, a, b, c, d, Offset]

- Sag For Asphere 3 (SagForAsphere3)

- Sag For Asphere 3

$$s^2 = x^2 + y^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6 + A8 * s^8$$

[k, r, A4, A6, A8]

- Sag For Asphere 3 With Offset

$$s^2 = x^2 + y^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6 + A8 * s^8 + \text{Offset}$$

[k, r, A4, A6, A8, Offset]

- Transform Sag For Asphere 3 (SagForAsphere3\_Transform)

- Transform Sag For Asphere 3

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6 + A8 * s^8$$

[k, r, A4, A6, A8, a, b, c, d]

- Transform Sag For Asphere 3 With Offset

$$s^2 = (ax + b)^2 + (cy + d)^2$$

$$z = (s^2/r)/(1 + (1 - (k + 1)(s/r)^2)^{1/2}) + A4 * s^4 + A6 * s^6 + A8 * s^8 + \text{Offset}$$

[k, r, A4, A6, A8, a, b, c, d, Offset]

## 4.8 Peak

- Extreme Value A (ExtremeValueA)

- Extreme Value A

$$z = \frac{a * \exp(-\exp(-(x - b)/c) - (x - b)/c + 1)}{\exp(-\exp(-(y - f)/g) - (y - f)/g + 1)} + d$$

[a, b, c, d, f, g]

- Extreme Value A With Offset

$$z = \frac{a * \exp(-\exp(-(x - b)/c) - (x - b)/c + 1)}{\exp(-\exp(-(y - f)/g) - (y - f)/g + 1) + \text{Offset}} + d$$

[a, b, c, d, f, g, Offset]

- Extreme Value B (ExtremeValueB)

- Extreme Value B

$$z = \frac{a * \exp(-\exp(-(x - b)/c) - (x - b)/c + 1)}{\exp(-\exp(-(y - d)/f) - (y - d)/f + 1)}$$

[a, b, c, d, f]

- Extreme Value B With Offset

$$z = \frac{a * \exp(-\exp(-(x - b)/c) - (x - b)/c + 1)}{\exp(-\exp(-(y - d)/f) - (y - d)/f + 1) + \text{Offset}}$$

[a, b, c, d, f, Offset]

- Gaussian A (GaussianA)

- Gaussian A

$$z = a * \exp(-0.5 * (((x - b)/c)^2 + ((y - d)/f)^2))$$

[a, b, c, d, f]

- Gaussian A With Offset

$$z = a * \exp(-0.5 * (((x - b)/c)^2 + ((y - d)/f)^2)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Gaussian B (GaussianB)

- Gaussian B

$$z = a * \exp(-0.5 * (((x - b)/c)^2)) + d * \exp(-0.5 * (((y - f)/g)^2))$$



[a, b, c, d, f, g]

– Gaussian B With Offset

$$z = a * \exp(-0.5 * (((x - b)/c)^2)) + d * \exp(-0.5 * (((y - f)/g)^2)) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- Log-Normal A (LogNormalA)

– Log-Normal A

$$z = a * \exp(-0.5 * (((\ln(x) - b)/c)^2 + ((\ln(y) - d)/f)^2))$$

[a, b, c, d, f]

– Log-Normal A With Offset

$$z = a * \exp(-0.5 * (((\ln(x) - b)/c)^2 + ((\ln(y) - d)/f)^2)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Log-Normal B (LogNormalB)

– Log-Normal B

$$z = a * \exp(-0.5 * (((\ln(x) - b)/c)^2)) + d * \exp(-0.5 * (((\ln(y) - f)/g)^2))$$

[a, b, c, d, f, g]

– Log-Normal B With Offset

$$z = a * \exp(-0.5 * (((\ln(x) - b)/c)^2)) + d * \exp(-0.5 * (((\ln(y) - f)/g)^2)) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- Logistic A (LogisticA)

– Logistic A

$$z = \frac{4a * \exp(-((x - b)/c)) / ((1 + \exp(-((x - b)/c)))^2)}{\exp(-((y - f)/g)) / ((1 + \exp(-((y - f)/g)))^2)} + 4d *$$

[a, b, c, d, f, g]

– Logistic A With Offset

$$z = \frac{4a * \exp(-((x - b)/c)) / ((1 + \exp(-((x - b)/c)))^2)}{\exp(-((y - f)/g)) / ((1 + \exp(-((y - f)/g)))^2)} + \text{Offset}$$

[a, b, c, d, f, g, Offset]

- Logistic B (LogisticB)

– Logistic B

$$z = 16a * \exp(-((x - b)/c) - ((y - d)/f)) / ((1 + \exp(-((x - b)/c)))^2 * (1 + \exp(-((y - d)/f)))^2)$$

[a, b, c, d, f]

- Logistic B With Offset

$$z = 16a * \exp(-((x - b)/c) - ((y - d)/f)) / ((1 + \exp(-((x - b)/c)))^2 * (1 + \exp(-((y - d)/f)))^2) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Lorentzian A (LorentzianA)

- Lorentzian A

$$z = a / ((1 + ((x - b)/c)^2) * (1 + ((y - d)/f)^2))$$

[a, b, c, d, f]

- Lorentzian A With Offset

$$z = a / ((1 + ((x - b)/c)^2) * (1 + ((y - d)/f)^2)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Lorentzian B (LorentzianB)

- Lorentzian B

$$z = a / (1 + ((x - b)/c)^2) + d * (1 + ((y - f)/g)^2)$$

[a, b, c, d, f, g]

- Lorentzian B With Offset

$$z = a / (1 + ((x - b)/c)^2) + d * (1 + ((y - f)/g)^2) + \text{Offset}$$

[a, b, c, d, f, g, Offset]

## 4.9 Polyfunctional

- User-Selectable Polyfunctional (UserSelectablePolyfunctional)

- User-Selectable Polyfunctional

$$z = \text{user} - \text{selectable function}$$

[]

## 4.10 Polynomial

- Full Cubic (FullCubic)

- Full Cubic

$$z = a + bx + cy + dx^2 + fy^2 + gx^3 + hy^3 + ixy + jx^2y + kxy^2$$

[a, b, c, d, f, g, h, i, j, k]

- Full Quadratic (FullQuadratic)

- Full Quadratic

$$z = a + bx + cy + dx^2 + fy^2 + gxy$$

[a, b, c, d, f, g]

- Linear (Linear)

- Linear

$$z = a + bx + cy$$

[a, b, c]

- Simplified Cubic (SimplifiedCubic)

- Simplified Cubic

$$z = a + bx + cy + dx^2 + fy^2 + gx^3 + hy^3$$

[a, b, c, d, f, g, h]

- Simplified Quadratic (SimplifiedQuadratic)

- Simplified Quadratic

$$z = a + bx + cy + dx^2 + fy^2$$

[a, b, c, d, f]

- User-Selectable Polynomial (UserSelectablePolynomial)

- User-Selectable Polynomial

$$z = user - selectablepolynomial$$

## 4.11 Power

- Power A (PowerA)

- Power A

$$z = a * (x^b + y^c)$$

[a, b, c]

- Power A With Offset

$$z = a * (x^b + y^c) + \text{Offset}$$

[a, b, c, Offset]

- Transform Power A (PowerA\_Transform)

- Transform Power A

$$z = a * ((dx + f)^b + (gy + h)^c)$$

[a, b, c, d, f, g, h]

- Transform Power A With Offset

$$z = a * ((dx + f)^b + (gy + h)^c) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Power B (PowerB)

- Power B

$$z = a + x^b + y^c$$

[a, b, c]

- Transform Power B (PowerB\_Transform)

- Transform Power B

$$z = a + (dx + f)^b + (gy + h)^c$$

[a, b, c, d, f, g, h]

- Power C (PowerC)

- Power C

$$z = a + x^b * y^c$$

[a, b, c]

- Transform Power C (PowerC\_Transform)

- Transform Power C

$$z = a + (dx + f)^b * (gy + h)^c$$

[a, b, c, d, f, g, h]

- Power D (PowerD)

- Power D

$$z = ax^b + cy^d$$

[a, b, c, d]

- Power D With Offset

$$z = ax^b + cy^d + \text{Offset}$$

[a, b, c, d, Offset]

- Transform Power D (PowerD\_Transform)

- Transform Power D

$$z = a(fx + g)^b + c(hy + i)^d$$

[a, b, c, d, f, g, h, i]

- Transform Power D With Offset

$$z = a(fx + g)^b + c(hy + i)^d + \text{Offset}$$

[a, b, c, d, f, g, h, i, Offset]

- Power E (PowerE)

- Power E

$$z = a * x^b * y^c$$

[a, b, c]

- Power E With Offset

$$z = a * x^b * y^c + \text{Offset}$$

[a, b, c, Offset]

- Transform Power E (PowerE\_Transform)

- Transform Power E

$$z = a * (dx + f)^b * (gy + h)^c$$

[a, b, c, d, f, g, h]

- Transform Power E With Offset

$$z = a * (dx + f)^b * (gy + h)^c + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

## 4.12 Rational

- Rational A (RationalA)

- Rational A

$$z = (a + bx + cy)/(1 + dx + fy)$$

[a, b, c, d, f]

- Rational A With Offset

$$z = (a + bx + cy)/(1 + dx + fy) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational B (RationalB)

- Rational B

$$z = (a + b * \ln(x) + c * \ln(y))/(1 + dx + fy)$$

[a, b, c, d, f]

- Rational B With Offset

$$z = (a + b * \ln(x) + c * \ln(y))/(1 + dx + fy) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational C (`RationalC`)

- Rational C

$$z = (a + b * \exp(x) + c * \ln(y)) / (1 + dx + fy)$$

[a, b, c, d, f]

- Rational C With Offset

$$z = (a + b * \exp(x) + c * \ln(y)) / (1 + dx + fy) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational D (`RationalD`)

- Rational D

$$z = (a + b * \ln(x) + c * \exp(y)) / (1 + dx + fy)$$

[a, b, c, d, f]

- Rational D With Offset

$$z = (a + b * \ln(x) + c * \exp(y)) / (1 + dx + fy) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational E (`RationalE`)

- Rational E

$$z = (a + b * \exp(x) + c * \exp(y)) / (1 + dx + fy)$$

[a, b, c, d, f]

- Rational E With Offset

$$z = (a + b * \exp(x) + c * \exp(y)) / (1 + dx + fy) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational F (`RationalF`)

- Rational F

$$z = (a + bx + cy) / (1 + d * \ln(x) + f * \ln(y))$$

[a, b, c, d, f]

- Rational F With Offset

$$z = (a + bx + cy) / (1 + d * \ln(x) + f * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational G (`RationalG`)

- Rational G

$$z = (a + bx + cy) / (1 + d * \exp(x) + f * \ln(y))$$

[a, b, c, d, f]

- Rational G With Offset

$$z = (a + bx + cy)/(1 + d * \exp(x) + f * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational H (RationalH)

- Rational H

$$z = (a + bx + cy)/(1 + d * \ln(x) + f * \exp(y))$$

[a, b, c, d, f]

- Rational H With Offset

$$z = (a + bx + cy)/(1 + d * \ln(x) + f * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational I (RationalI)

- Rational I

$$z = (a + bx + cy)/(1 + d * \exp(x) + f * \exp(y))$$

[a, b, c, d, f]

- Rational I With Offset

$$z = (a + bx + cy)/(1 + d * \exp(x) + f * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational J (RationalJ)

- Rational J

$$z = (a + b * \ln(x) + c * \ln(y))/(1 + d * \ln(x) + f * \ln(y))$$

[a, b, c, d, f]

- Rational J With Offset

$$z = (a + b * \ln(x) + c * \ln(y))/(1 + d * \ln(x) + f * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational K (RationalK)

- Rational K

$$z = (a + b * \exp(x) + c * \ln(y))/(1 + d * \exp(x) + f * \ln(y))$$

[a, b, c, d, f]

- Rational K With Offset

$$z = (a + b * \exp(x) + c * \ln(y))/(1 + d * \exp(x) + f * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational L (RationalL)

- Rational L

$$z = (a + b * \ln(x) + c * \exp(y)) / (1 + d * \ln(x) + f * \exp(y))$$

[a, b, c, d, f]

- Rational L With Offset

$$z = (a + b * \ln(x) + c * \exp(y)) / (1 + d * \ln(x) + f * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational M (RationalM)

- Rational M

$$z = (a + b * \exp(x) + c * \exp(y)) / (1 + d * \exp(x) + f * \exp(y))$$

[a, b, c, d, f]

- Rational M With Offset

$$z = (a + b * \exp(x) + c * \exp(y)) / (1 + d * \exp(x) + f * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, Offset]

- Rational N (RationalN)

- Rational N

$$z = (a + bx + cy + dxy) / (1 + fx + gy + hxy)$$

[a, b, c, d, f, g, h]

- Rational N With Offset

$$z = (a + bx + cy + dxy) / (1 + fx + gy + hxy) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational O (RationalO)

- Rational O

$$z = (a + b * \ln(x) + c * \ln(y) + d * \ln(x)\ln(y)) / (1 + fx + gy + hxy)$$

[a, b, c, d, f, g, h]

- Rational O With Offset

$$z = (a + b * \ln(x) + c * \ln(y) + d * \ln(x)\ln(y)) / (1 + fx + gy + hxy) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational P (RationalP)

- Rational P

$$z = (a + b * \exp(x) + c * \ln(y) + d * \exp(x)\ln(y)) / (1 + fx + gy + hxy)$$

[a, b, c, d, f, g, h]



- Rational P With Offset

$$z = (a + b * \exp(x) + c * \ln(y) + d * \exp(x) \ln(y)) / (1 + fx + gy + hxy) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational Q (RationalQ)

- Rational Q

$$z = (a + b * \ln(x) + c * \exp(y) + d * \ln(x) \exp(y)) / (1 + fx + gy + hxy)$$

[a, b, c, d, f, g, h]

- Rational Q With Offset

$$z = (a + b * \ln(x) + c * \exp(y) + d * \ln(x) \exp(y)) / (1 + fx + gy + hxy) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational R (RationalR)

- Rational R

$$z = (a + b * \exp(x) + c * \exp(y) + d * \exp(x) \exp(y)) / (1 + fx + gy + hxy)$$

[a, b, c, d, f, g, h]

- Rational R With Offset

$$z = (a + b * \exp(x) + c * \exp(y) + d * \exp(x) \exp(y)) / (1 + fx + gy + hxy) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational S (RationalS)

- Rational S

$$z = (a + bx + cy + dxy) / (1 + f * \ln(x) + g * \ln(y) + h * \ln(x) * \ln(y))$$

[a, b, c, d, f, g, h]

- Rational S With Offset

$$z = (a + bx + cy + dxy) / (1 + f * \ln(x) + g * \ln(y) + h * \ln(x) * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational T (RationalT)

- Rational T

$$z = (a + bx + cy + dxy) / (1 + f * \exp(x) + g * \ln(y) + h * \exp(x) * \ln(y))$$

[a, b, c, d, f, g, h]

- Rational T With Offset

$$z = (a + bx + cy + dxy) / (1 + f * \exp(x) + g * \ln(y) + h * \exp(x) * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational U (RationalU)

- Rational U

$$z = (a + bx + cy + dxy)/(1 + f * \ln(x) + g * \exp(y) + h * \ln(x) * \exp(y))$$

[a, b, c, d, f, g, h]

- Rational U With Offset

$$z = (a + bx + cy + dxy)/(1 + f * \ln(x) + g * \exp(y) + h * \ln(x) * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational V (RationalV)

- Rational V

$$z = (a + bx + cy + dxy)/(1 + f * \exp(x) + g * \exp(y) + h * \exp(x) * \exp(y))$$

[a, b, c, d, f, g, h]

- Rational V With Offset

$$z = (a + bx + cy + dxy)/(1 + f * \exp(x) + g * \exp(y) + h * \exp(x) * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational W (RationalW)

- Rational W

$$z = (a + b * \ln(x) + c * \ln(y) + d * \ln(x) * \ln(y))/(1 + f * \ln(x) + g * \ln(y) + h * \ln(x) * \ln(y))$$

[a, b, c, d, f, g, h]

- Rational W With Offset

$$z = (a + b * \ln(x) + c * \ln(y) + d * \ln(x) * \ln(y))/(1 + f * \ln(x) + g * \ln(y) + h * \ln(x) * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational X (RationalX)

- Rational X

$$z = (a + b * \exp(x) + c * \ln(y) + d * \exp(x) * \ln(y))/(1 + f * \exp(x) + g * \ln(y) + h * \exp(x) * \ln(y))$$

[a, b, c, d, f, g, h]

- Rational X With Offset

$$z = (a + b * \exp(x) + c * \ln(y) + d * \exp(x) * \ln(y))/(1 + f * \exp(x) + g * \ln(y) + h * \exp(x) * \ln(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational Y (RationalY)

- Rational Y

$$z = (a + b * \ln(x) + c * \exp(y) + d * \ln(x) * \exp(y))/(1 + f * \ln(x) + g * \exp(y) + h * \ln(x) * \exp(y))$$

[a, b, c, d, f, g, h]

- Rational Y With Offset

$$z = (a + b * \ln(x) + c * \exp(y) + d * \ln(x) * \exp(y)) / (1 + f * \ln(x) + g * \exp(y) + h * \ln(x) * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

- Rational Z (RationalZ)

- Rational Z

$$z = (a + b * \exp(x) + c * \exp(y) + d * \exp(x) * \exp(y)) / (1 + f * \exp(x) + g * \exp(y) + h * \exp(x) * \exp(y))$$

[a, b, c, d, f, g, h]

- Rational Z With Offset

$$z = (a + b * \exp(x) + c * \exp(y) + d * \exp(x) * \exp(y)) / (1 + f * \exp(x) + g * \exp(y) + h * \exp(x) * \exp(y)) + \text{Offset}$$

[a, b, c, d, f, g, h, Offset]

## 4.13 RomanSurfaces

- Roman Surface (minus) (RomanSurfaceMinus)

- Roman Surface (minus)

$$z = (k(y^2 - x^2) - (x^2 - y^2)\sqrt{(k^2 - x^2 - y^2)}) / (2(x^2 + y^2))$$

[k]

- Roman Surface (minus) With Offset

$$z = (k(y^2 - x^2) - (x^2 - y^2)\sqrt{(k^2 - x^2 - y^2)}) / (2(x^2 + y^2)) + \text{Offset}$$

[k, Offset]

- Roman Surface (minus) Offset XY (RomanSurfaceMinus\_OffsetXY)

- Roman Surface (minus) Offset XY

$$z = (k((y + b)^2 - (x + a)^2) - ((x + a)^2 - (y + b)^2)\sqrt{(k^2 - (x + a)^2 - (y + b)^2)}) / (2((x + a)^2 + (y + b)^2))$$

[k, a, b]

- Roman Surface (minus) Offset XY With Offset

$$z = (k((y + b)^2 - (x + a)^2) - ((x + a)^2 - (y + b)^2)\sqrt{(k^2 - (x + a)^2 - (y + b)^2)}) / (2((x + a)^2 + (y + b)^2)) + \text{Offset}$$

[k, a, b, Offset]

- Roman Surface (minus) Scaled And Offset XY (RomanSurfaceMinus\_ScaledAndOffsetXY)

- Roman Surface (minus) Scaled And Offset XY

$$z = (k((cy + d)^2 - (ax + b)^2) - ((ax + b)^2 - (cy + d)^2)\sqrt{(k^2 - (ax + b)^2 - (cy + d)^2)}) / (2((ax + b)^2 + (cy + d)^2))$$

[k, a, b, c, d]

- Roman Surface (minus) Scaled And Offset XY With Offset

$$z = (k((cy + d)^2 - (ax + b)^2) - ((ax + b)^2 - (cy + d)^2)\sqrt{(k^2 - (ax + b)^2 - (cy + d)^2)}) / (2((ax + b)^2 + (cy + d)^2)) + \text{Offset}$$

[k, a, b, c, d, Offset]

- Roman Surface (plus) (RomanSurfacePlus)

- Roman Surface (plus)

$$z = (k(y^2 - x^2) + (x^2 - y^2)\sqrt{(k^2 - x^2 - y^2)}) / (2(x^2 + y^2))$$

[k]

- Roman Surface (plus) With Offset

$$z = (k(y^2 - x^2) + (x^2 - y^2)\sqrt{(k^2 - x^2 - y^2)}) / (2(x^2 + y^2)) + \text{Offset}$$

[k, Offset]

- Roman Surface (plus) Offset XY (RomanSurfacePlus\_OffsetXY)

- Roman Surface (plus) Offset XY

$$z = (k((y + b)^2 - (x + a)^2) + ((x + a)^2 - (y + b)^2)\sqrt{(k^2 - (x + a)^2 - (y + b)^2)}) / (2((x + a)^2 + (y + b)^2))$$

[k, a, b]

- Roman Surface (plus) Offset XY With Offset

$$z = (k((y + b)^2 - (x + a)^2) + ((x + a)^2 - (y + b)^2)\sqrt{(k^2 - (x + a)^2 - (y + b)^2)}) / (2((x + a)^2 + (y + b)^2)) + \text{Offset}$$

[k, a, b, Offset]

- Roman Surface (plus) Scaled And Offset XY (RomanSurfacePlus\_ScaledAndOffsetXY)

- Roman Surface (plus) Scaled And Offset XY

$$z = (k((cy + d)^2 - (ax + b)^2) + ((ax + b)^2 - (cy + d)^2)\sqrt{(k^2 - (ax + b)^2 - (cy + d)^2)}) / (2((ax + b)^2 + (cy + d)^2))$$

[k, a, b, c, d]

- Roman Surface (plus) Scaled And Offset XY With Offset

$$z = (k((cy + d)^2 - (ax + b)^2) + ((ax + b)^2 - (cy + d)^2)\sqrt{(k^2 - (ax + b)^2 - (cy + d)^2)}) / (2((ax + b)^2 + (cy + d)^2)) + \text{Offset}$$

[k, a, b, c, d, Offset]

- Roman Surface (plus) Scaled (RomanSurfacePlus\_scaled)

- Roman Surface (plus) Scaled

$$z = \text{Scale} * (k(y^2 - x^2) + (x^2 - y^2)\sqrt{(k^2 - x^2 - y^2)}) / (2(x^2 + y^2))$$

[k, Scale]

- Roman Surface (plus) Scaled With Offset

$$z = Scale * (k(y^2 - x^2) + (x^2 - y^2)\sqrt{(k^2 - x^2 - y^2)})/(2(x^2 + y^2)) + Offset$$

[k, Scale, Offset]

## 4.14 Sigmoidal

- Andrea Prunotto Sigmoid A (AndreaPrunottoSigmoidA)

- Andrea Prunotto Sigmoid A

$$z = a0 + (a1/(1.0 + \exp(a2 * (x + a3 + a4 * y + a5 * x * y))))$$

[a0, a1, a2, a3, a4, a5]

- Andrea Prunotto Sigmoid B (AndreaPrunottoSigmoidB)

- Andrea Prunotto Sigmoid B

$$z = a0 + (a1/(1.0 + \exp(a2 * (x * a3 + a4 * y + a5 * x * y))))$$

[a0, a1, a2, a3, a4, a5]

- Fraser Smith Sigmoid (FraserSmithSigmoid)

- Fraser Smith Sigmoid

$$z = 1.0/((1.0 + \exp(a - bx)) * (1.0 + \exp(c - dy)))$$

[a, b, c, d]

- Fraser Smith Sigmoid With Offset

$$z = 1.0/((1.0 + \exp(a - bx)) * (1.0 + \exp(c - dy))) + Offset$$

[a, b, c, d, Offset]

- Fraser Smith Sigmoid Scaled (FraserSmithSigmoid\_scaled)

- Fraser Smith Sigmoid Scaled

$$z = Scale/((1.0 + \exp(a - bx)) * (1.0 + \exp(c - dy)))$$

[a, b, c, d, Scale]

- Fraser Smith Sigmoid Scaled With Offset

$$z = Scale/((1.0 + \exp(a - bx)) * (1.0 + \exp(c - dy))) + Offset$$

[a, b, c, d, Scale, Offset]

- Sigmoid (Sigmoid)

- Sigmoid

$$z = a/((1.0 + \exp(b - cx)) * (1.0 + \exp(d - fy)))$$

[a, b, c, d, f]

- Sigmoid With Offset

$$z = a / ((1.0 + \exp(b - cx)) * (1.0 + \exp(d - fy))) + \text{Offset}$$

[a, b, c, d, f, Offset]

## 4.15 Simple

- Simple Equation 01 (SimpleEquation\_01)

- Simple Equation 01

$$z = a * \text{pow}(x, b) * \text{pow}(y, c)$$

[a, b, c]

- Simple Equation 01 With Offset

$$z = a * \text{pow}(x, b) * \text{pow}(y, c) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 02 (SimpleEquation\_02)

- Simple Equation 02

$$z = x / (a + b * y)$$

[a, b]

- Simple Equation 02 With Offset

$$z = x / (a + b * y) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 03 (SimpleEquation\_03)

- Simple Equation 03

$$z = y / (a + b * x)$$

[a, b]

- Simple Equation 03 With Offset

$$z = y / (a + b * x) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 04 (SimpleEquation\_04)

- Simple Equation 04

$$z = a * \text{pow}(x, b * y)$$

[a, b]

- Simple Equation 04 With Offset
$$z = a * pow(x, b * y) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 05 (SimpleEquation\_05)
  - Simple Equation 05
$$z = a * pow(y, b * x)$$

[a, b]
  - Simple Equation 05 With Offset
$$z = a * pow(y, b * x) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 06 (SimpleEquation\_06)
  - Simple Equation 06
$$z = a * pow(x, b/y)$$

[a, b]
  - Simple Equation 06 With Offset
$$z = a * pow(x, b/y) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 07 (SimpleEquation\_07)
  - Simple Equation 07
$$z = a * pow(y, b/x)$$

[a, b]
  - Simple Equation 07 With Offset
$$z = a * pow(y, b/x) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 08 (SimpleEquation\_08)
  - Simple Equation 08
$$z = a * x + b * pow(y, 2.0)$$

[a, b]
  - Simple Equation 08 With Offset
$$z = a * x + b * pow(y, 2.0) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 09 (SimpleEquation\_09)

- Simple Equation 09

$$z = a * y + b * pow(x, 2.0)$$

[a, b]

- Simple Equation 09 With Offset

$$z = a * y + b * pow(x, 2.0) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 10 (SimpleEquation\_10)

- Simple Equation 10

$$z = x / (a + b * pow(y, 2.0))$$

[a, b]

- Simple Equation 10 With Offset

$$z = x / (a + b * pow(y, 2.0)) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 11 (SimpleEquation\_11)

- Simple Equation 11

$$z = y / (a + b * pow(x, 2.0))$$

[a, b]

- Simple Equation 11 With Offset

$$z = y / (a + b * pow(x, 2.0)) + \text{Offset}$$

[a, b, Offset]

- Simple Equation 12 (SimpleEquation\_12)

- Simple Equation 12

$$z = a * pow(b, x) * pow(y, c)$$

[a, b, c]

- Simple Equation 12 With Offset

$$z = a * pow(b, x) * pow(y, c) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 13 (SimpleEquation\_13)

- Simple Equation 13

$$z = a * pow(b, y) * pow(x, c)$$

[a, b, c]



- Simple Equation 13 With Offset
$$z = a * pow(b, y) * pow(x, c) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 14 (SimpleEquation\_14)
  - Simple Equation 14
$$z = a * pow(x * y, b)$$

[a, b]
  - Simple Equation 14 With Offset
$$z = a * pow(x * y, b) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 15 (SimpleEquation\_15)
  - Simple Equation 15
$$z = a * pow(x/y, b)$$

[a, b]
  - Simple Equation 15 With Offset
$$z = a * pow(x/y, b) + \text{Offset}$$

[a, b, Offset]
- Simple Equation 16 (SimpleEquation\_16)
  - Simple Equation 16
$$z = a * (pow(b, 1.0/x)) * pow(y, c)$$

[a, b, c]
  - Simple Equation 16 With Offset
$$z = a * (pow(b, 1.0/x)) * pow(y, c) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 17 (SimpleEquation\_17)
  - Simple Equation 17
$$z = a * pow(b, 1.0/y) * pow(x, c)$$

[a, b, c]
  - Simple Equation 17 With Offset
$$z = a * pow(b, 1.0/y) * pow(x, c) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 18 (SimpleEquation\_18)

- Simple Equation 18

$$z = a * \text{pow}(x/b, c) * \exp(y/b)$$

[a, b, c]

- Simple Equation 18 With Offset

$$z = a * \text{pow}(x/b, c) * \exp(y/b) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 19 (SimpleEquation\_19)

- Simple Equation 19

$$z = a * \text{pow}(y/b, c) * \exp(x/b)$$

[a, b, c]

- Simple Equation 19 With Offset

$$z = a * \text{pow}(y/b, c) * \exp(x/b) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 20 (SimpleEquation\_20)

- Simple Equation 20

$$z = a * \text{pow}(x, b + c * y)$$

[a, b, c]

- Simple Equation 20 With Offset

$$z = a * \text{pow}(x, b + c * y) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 21 (SimpleEquation\_21)

- Simple Equation 21

$$z = a * \text{pow}(y, b + c * x)$$

[a, b, c]

- Simple Equation 21 With Offset

$$z = a * \text{pow}(y, b + c * x) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 22 (SimpleEquation\_22)

- Simple Equation 22

$$z = a * \text{pow}(x, b + c/y)$$

[a, b, c]

- Simple Equation 22 With Offset
$$z = a * pow(x, b + c/y) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 23 (SimpleEquation\_23)
  - Simple Equation 23
$$z = a * pow(y, b + c/x)$$

[a, b, c]
  - Simple Equation 23 With Offset
$$z = a * pow(y, b + c/x) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 24 (SimpleEquation\_24)
  - Simple Equation 24
$$z = a * pow(x, b + c * \ln(y))$$

[a, b, c]
  - Simple Equation 24 With Offset
$$z = a * pow(x, b + c * \ln(y)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 25 (SimpleEquation\_25)
  - Simple Equation 25
$$z = a * pow(y, b + c * \ln(x))$$

[a, b, c]
  - Simple Equation 25 With Offset
$$z = a * pow(y, b + c * \ln(x)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 26 (SimpleEquation\_26)
  - Simple Equation 26
$$z = a * pow(y, b + c/\ln(x))$$

[a, b, c]
  - Simple Equation 26 With Offset
$$z = a * pow(y, b + c/\ln(x)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 27 (SimpleEquation\_27)

- Simple Equation 27
$$z = a * \text{pow}(x, b + c/\ln(y))$$

[a, b, c]
- Simple Equation 27 With Offset
$$z = a * \text{pow}(x, b + c/\ln(y)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 28 (SimpleEquation\_28)
  - Simple Equation 28
$$z = a * \exp(b * x + c * \text{pow}(y, 2.0))$$

[a, b, c]
  - Simple Equation 28 With Offset
$$z = a * \exp(b * x + c * \text{pow}(y, 2.0)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 29 (SimpleEquation\_29)
  - Simple Equation 29
$$z = a * \exp(b * y + c * \text{pow}(x, 2.0))$$

[a, b, c]
  - Simple Equation 29 With Offset
$$z = a * \exp(b * y + c * \text{pow}(x, 2.0)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 30 (SimpleEquation\_30)
  - Simple Equation 30
$$z = a * \exp(b/x + c * y)$$

[a, b, c]
  - Simple Equation 30 With Offset
$$z = a * \exp(b/x + c * y) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 31 (SimpleEquation\_31)
  - Simple Equation 31
$$z = a * \exp(b/y + c * x)$$

[a, b, c]

- Simple Equation 31 With Offset
$$z = a * \exp(b/y + c * x) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 32 (SimpleEquation\_32)
  - Simple Equation 32
$$z = (a + x)/(b + c * y)$$

[a, b, c]
  - Simple Equation 32 With Offset
$$z = (a + x)/(b + c * y) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 33 (SimpleEquation\_33)
  - Simple Equation 33
$$z = (a + y)/(b + c * x)$$

[a, b, c]
  - Simple Equation 33 With Offset
$$z = (a + y)/(b + c * x) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 34 (SimpleEquation\_34)
  - Simple Equation 34
$$z = (a + x)/(b + c * \text{pow}(y, 2.0))$$

[a, b, c]
  - Simple Equation 34 With Offset
$$z = (a + x)/(b + c * \text{pow}(y, 2.0)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 35 (SimpleEquation\_35)
  - Simple Equation 35
$$z = (a + y)/(b + c * \text{pow}(x, 2.0))$$

[a, b, c]
  - Simple Equation 35 With Offset
$$z = (a + y)/(b + c * \text{pow}(x, 2.0)) + \text{Offset}$$

[a, b, c, Offset]
- Simple Equation 36 (SimpleEquation\_36)

- Simple Equation 36

$$z = a * (\exp(b * x) - \exp(c * y))$$

[a, b, c]

- Simple Equation 36 With Offset

$$z = a * (\exp(b * x) - \exp(c * y)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 37 (SimpleEquation\_37)

- Simple Equation 37

$$z = a * \text{pow}(x, b * \text{pow}(y, c))$$

[a, b, c]

- Simple Equation 37 With Offset

$$z = a * \text{pow}(x, b * \text{pow}(y, c)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 38 (SimpleEquation\_38)

- Simple Equation 38

$$z = a * \text{pow}(y, b * \text{pow}(x, c))$$

[a, b, c]

- Simple Equation 38 With Offset

$$z = a * \text{pow}(y, b * \text{pow}(x, c)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 39 (SimpleEquation\_39)

- Simple Equation 39

$$z = x / (a + b * y + c * \text{pow}(y, 0.5))$$

[a, b, c]

- Simple Equation 39 With Offset

$$z = x / (a + b * y + c * \text{pow}(y, 0.5)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 40 (SimpleEquation\_40)

- Simple Equation 40

$$z = y / (a + b * x + c * \text{pow}(x, 0.5))$$

[a, b, c]

- Simple Equation 40 With Offset

$$z = y / (a + b * x + c * \text{pow}(x, 0.5)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 41 (SimpleEquation\_41)

- Simple Equation 41

$$z = \exp(a + b/x + c * \ln(y))$$

[a, b, c]

- Simple Equation 41 With Offset

$$z = \exp(a + b/x + c * \ln(y)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 42 (SimpleEquation\_42)

- Simple Equation 42

$$z = \exp(a + b/y + c * \ln(x))$$

[a, b, c]

- Simple Equation 42 With Offset

$$z = \exp(a + b/y + c * \ln(x)) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 43 (SimpleEquation\_43)

- Simple Equation 43

$$z = a * \text{pow}(x, b) * \ln(y + c)$$

[a, b, c]

- Simple Equation 43 With Offset

$$z = a * \text{pow}(x, b) * \ln(y + c) + \text{Offset}$$

[a, b, c, Offset]

- Simple Equation 44 (SimpleEquation\_44)

- Simple Equation 44

$$z = a * \text{pow}(y, b) * \ln(x + c)$$

[a, b, c]

- Simple Equation 44 With Offset

$$z = a * \text{pow}(y, b) * \ln(x + c) + \text{Offset}$$

[a, b, c, Offset]

## 4.16 Spline

- Spline (Spline)

- Spline

$$z = B - \text{SplineInterpolationSurface}$$

## 4.17 TaylorSeries

- Taylor Series A (TaylorA)

- Taylor Series A

$$z = a + bx + cy + dx^2 + fy^2 + gxy$$

[a, b, c, d, f, g]

- Taylor Series B (TaylorB)

- Taylor Series B

$$z = a + b * \ln(x) + cy + d * \ln(x)^2 + fy^2 + g * \ln(x) * y$$

[a, b, c, d, f, g]

- Taylor Series C (TaylorC)

- Taylor Series C

$$z = a + bx + c * \ln(y) + dx^2 + f * \ln(y)^2 + g * x * \ln(y)$$

[a, b, c, d, f, g]

- Taylor Series D (TaylorD)

- Taylor Series D

$$z = a + b * \ln(x) + c * \ln(y) + d * \ln(x)^2 + f * \ln(y)^2 + g * \ln(x) * \ln(y)$$

[a, b, c, d, f, g]

- Taylor Series E (TaylorE)

- Taylor Series E

$$z = a + b/x + cy + d/x^2 + fy^2 + gy/x$$

[a, b, c, d, f, g]

- Taylor Series F (TaylorF)

- Taylor Series F

$$z = a + b/\ln(x) + cy + d/\ln(x)^2 + fy^2 + gy/\ln(x)$$

[a, b, c, d, f, g]

- Taylor Series G (TaylorG)



- Taylor Series G

$$z = a + b/x + c * \ln(y) + d/x^2 + f * \ln(y)^2 + g * \ln(y)/x$$

[a, b, c, d, f, g]

- Taylor Series H (TaylorH)

- Taylor Series H

$$z = a + b/\ln(x) + c * \ln(y) + d/\ln(x)^2 + f * \ln(y)^2 + g * \ln(y)/\ln(x)$$

[a, b, c, d, f, g]

- Taylor Series I (TaylorI)

- Taylor Series I

$$z = a + bx + c/y + dx^2 + f/y^2 + gx/y$$

[a, b, c, d, f, g]

- Taylor Series J (TaylorJ)

- Taylor Series J

$$z = a + b * \ln(x) + c/y + d * \ln(x)^2 + f/y^2 + g * \ln(x)/y$$

[a, b, c, d, f, g]

- Taylor Series K (TaylorK)

- Taylor Series K

$$z = a + bx + c/\ln(y) + dx^2 + f/\ln(y)^2 + gx/\ln(y)$$

[a, b, c, d, f, g]

- Taylor Series L (TaylorL)

- Taylor Series L

$$z = a + b * \ln(x) + c/\ln(y) + d * \ln(x)^2 + f/\ln(y)^2 + g * \ln(x)/\ln(y)$$

[a, b, c, d, f, g]

- Taylor Series M (TaylorM)

- Taylor Series M

$$z = a + b/x + c/y + d/x^2 + f/y^2 + g/(xy)$$

[a, b, c, d, f, g]

- Taylor Series N (TaylorN)

- Taylor Series N

$$z = a + b/\ln(x) + c/y + d/\ln(x)^2 + f/y^2 + g/(\ln(x) * y)$$

[a, b, c, d, f, g]

- Taylor Series O (TaylorO)

- Taylor Series O

$$z = a + b/x + c/\ln(y) + d/x^2 + f/\ln(y)^2 + g/(x * \ln(y))$$

[a, b, c, d, f, g]

- Taylor Series P (TaylorP)

- Taylor Series P

$$z = a + b/\ln(x) + c/\ln(y) + d/\ln(x)^2 + f/\ln(y)^2 + g/(\ln(x) * \ln(y))$$

[a, b, c, d, f, g]

## 4.18 Trigonometric

- Cosh XY [radians] (CoshXY)

- Cosh XY [radians]

$$z = amplitude * cosh(pi * (xy - center)/width)$$

[amplitude, center, width]

- Cosh XY [radians] With Offset

$$z = amplitude * cosh(pi * (xy - center)/width) + Offset$$

[amplitude, center, width, Offset]

- Cosh X Plus Cosh Y [radians] (CoshX\_Plus\_CoshY)

- Cosh X Plus Cosh Y [radians]

$$z = amplitude\_x * cosh(pi * (x - center\_x)/width\_x) + amplitude\_y * cosh(pi * (y - center\_y)/width\_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Cosh X Plus Cosh Y [radians] With Offset

$$z = amplitude\_x * cosh(pi * (x - center\_x)/width\_x) + amplitude\_y * cosh(pi * (y - center\_y)/width\_y) + Offset$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Cosh X Plus Sine Y [radians] (CoshX\_Plus\_SineY)

- Cosh X Plus Sine Y [radians]

$$z = amplitude\_x * cosh(pi * (x - center\_x)/width\_x) + amplitude\_y * sin(pi * (y - center\_y)/width\_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Cosh X Plus Sine Y [radians] With Offset

$$z = amplitude\_x * cosh(pi * (x - center\_x)/width\_x) + amplitude\_y * sin(pi * (y - center\_y)/width\_y) + Offset$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Cosh X Plus Tangent Y [radians] (CoshX\_Plus\_TangentY)

- Cosh X Plus Tangent Y [radians]

$$z = \text{amplitude\_x} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) + \text{amplitude\_y} * \tan(\pi * (y - \text{center\_y}) / \text{width\_y})$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Cosh X Plus Tangent Y [radians] With Offset

$$z = \text{amplitude\_x} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) + \text{amplitude\_y} * \tan(\pi * (y - \text{center\_y}) / \text{width\_y}) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Cosh X Times Cosh Y[radians] (CoshX\_Times\_CoshY)

- Cosh X Times Cosh Y[radians]

$$z = \text{amplitude} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) * \cosh(\pi * (y - \text{center\_y}) / \text{width\_y})$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Cosh X Times Cosh Y[radians] With Offset

$$z = \text{amplitude} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) * \cosh(\pi * (y - \text{center\_y}) / \text{width\_y}) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Cosh X Times Sine Y [radians] (CoshX\_Times\_SineY)

- Cosh X Times Sine Y [radians]

$$z = \text{amplitude} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) * \sin(\pi * (y - \text{center\_y}) / \text{width\_y})$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Cosh X Times Sine Y [radians] With Offset

$$z = \text{amplitude} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) * \sin(\pi * (y - \text{center\_y}) / \text{width\_y}) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Cosh X Times Tangent Y [radians] (CoshX\_Times\_TangentY)

- Cosh X Times Tangent Y [radians]

$$z = \text{amplitude} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) * \tan(\pi * (y - \text{center\_y}) / \text{width\_y})$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Cosh X Times Tangent Y [radians] With Offset

$$z = \text{amplitude} * \cosh(\pi * (x - \text{center\_x}) / \text{width\_x}) * \tan(\pi * (y - \text{center\_y}) / \text{width\_y}) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Reza's Custom Equation One [radians] (RezaCustomOne)

- Reza's Custom Equation One [radians]

$$z = (\cos(a * x - b * y) + \sin(c * x - d * y))^n - (\cos(f * x - g * y) + \sin(h * x - i * y))^n$$

[a, b, c, d, f, g, h, i, n]

- Reza's Custom Equation One [radians] With Offset

$$z = (\cos(a * x - b * y) + \sin(c * x - d * y))^n - (\cos(f * x - g * y) + \sin(h * x - i * y))^n + \text{Offset}$$

[a, b, c, d, f, g, h, i, n, Offset]

- Reza's Custom Equation Two [radians] (RezaCustomTwo)

- Reza's Custom Equation Two [radians]

$$z = \text{abs}(\cos((A * (x + B)) + C * (y + D))) + \text{abs}(\cos((A * (x + B)) - C * (y + D))) - (\sin(E * x + F))^2 - (\sin(E * y + G))^2$$

[A, B, C, D, E, F, G]

- Reza's Custom Equation Two [radians] With Offset

$$z = \text{abs}(\cos((A * (x + B)) + C * (y + D))) + \text{abs}(\cos((A * (x + B)) - C * (y + D))) - (\sin(E * x + F))^2 - (\sin(E * y + G))^2 + \text{Offset}$$

[A, B, C, D, E, F, G, Offset]

- Sine XY [radians] (SineXY)

- Sine XY [radians]

$$z = \text{amplitude} * \sin(\pi * (xy - \text{center}) / \text{width})$$

[amplitude, center, width]

- Sine XY [radians] With Offset

$$z = \text{amplitude} * \sin(\pi * (xy - \text{center}) / \text{width}) + \text{Offset}$$

[amplitude, center, width, Offset]

- Sine X Plus Cosh Y [radians] (SineX\_Plus\_CoshY)

- Sine X Plus Cosh Y [radians]

$$z = \text{amplitude}_x * \sin(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \cosh(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Sine X Plus Cosh Y [radians] With Offset

$$z = \text{amplitude}_x * \sin(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \cosh(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Sine X Plus Sine Y [radians] (SineX\_Plus\_SineY)

- Sine X Plus Sine Y [radians]

$$z = \text{amplitude}_x * \sin(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \sin(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Sine X Plus Sine Y [radians] With Offset

$$z = \text{amplitude}_x * \sin(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \sin(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Sine X Plus Tangent Y [radians] (SineX\_Plus\_TangentY)

- Sine X Plus Tangent Y [radians]

$$z = \text{amplitude}_x * \sin(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \tan(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Sine X Plus Tangent Y [radians] With Offset

$$z = \text{amplitude}_x * \sin(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \tan(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Sine X Times Cosh Y [radians] (SineX\_Times\_CoshY)

- Sine X Times Cosh Y [radians]

$$z = \text{amplitude} * \sin(\pi * (x - \text{center}_x) / \text{width}_x) * \cosh(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Sine X Times Cosh Y [radians] With Offset

$$z = \text{amplitude} * \sin(\pi * (x - \text{center}_x) / \text{width}_x) * \cosh(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Sine X Times Sine Y [radians] (SineX\_Times\_SineY)

- Sine X Times Sine Y [radians]

$$z = \text{amplitude} * \sin(\pi * (x - \text{center}_x) / \text{width}_x) * \sin(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Sine X Times Sine Y [radians] With Offset

$$z = \text{amplitude} * \sin(\pi * (x - \text{center}_x) / \text{width}_x) * \sin(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Sine X Times Tangent Y [radians] (SineX\_Times\_TangentY)

- Sine X Times Tangent Y [radians]

$$z = \text{amplitude} * \sin(\pi * (x - \text{center}_x) / \text{width}_x) * \tan(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Sine X Times Tangent Y [radians] With Offset

$$z = \text{amplitude} * \sin(\pi * (x - \text{center}_x) / \text{width}_x) * \tan(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Tangent XY [radians] (TangentXY)

- Tangent XY [radians]

$$z = \text{amplitude} * \tan(\pi * (xy - \text{center}) / \text{width})$$

[amplitude, center, width]

- Tangent XY [radians] With Offset

$$z = \text{amplitude} * \tan(\pi * (xy - \text{center}) / \text{width}) + \text{Offset}$$

[amplitude, center, width, Offset]

- Tangent X Plus Cosh Y [radians] (TangentX\_Plus\_CoshY)

- Tangent X Plus Cosh Y [radians]

$$z = \text{amplitude}_x * \tan(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \cosh(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Tangent X Plus Cosh Y [radians] With Offset

$$z = \text{amplitude}_x * \tan(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \cosh(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Tangent X Plus Sine Y [radians] (TangentX\_Plus\_SineY)

- Tangent X Plus Sine Y [radians]

$$z = \text{amplitude}_x * \tan(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \sin(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Tangent X Plus Sine Y [radians] With Offset

$$z = \text{amplitude}_x * \tan(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \sin(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Tangent X Plus Tangent Y [radians] (TangentX\_Plus\_TangentY)

- Tangent X Plus Tangent Y [radians]

$$z = \text{amplitude}_x * \tan(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \tan(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y]

- Tangent X Plus Tangent Y [radians] With Offset

$$z = \text{amplitude}_x * \tan(\pi * (x - \text{center}_x) / \text{width}_x) + \text{amplitude}_y * \tan(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude\_x, center\_x, width\_x, amplitude\_y, center\_y, width\_y, Offset]

- Tangent X Times Cosh Y [radians] (TangentX\_Times\_CoshY)

- Tangent X Times Cosh Y [radians]

$$z = \text{amplitude} * \tan(\pi * (x - \text{center}_x) / \text{width}_x) * \cosh(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Tangent X Times Cosh Y [radians] With Offset

$$z = \text{amplitude} * \tan(\pi * (x - \text{center}_x) / \text{width}_x) * \cosh(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Tangent X Times Sine Y [radians] (TangentX\_Times\_SineY)

- Tangent X Times Sine Y [radians]

$$z = \text{amplitude} * \tan(\pi * (x - \text{center}_x) / \text{width}_x) * \sin(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Tangent X Times Sine Y [radians] With Offset

$$z = \text{amplitude} * \tan(\pi * (x - \text{center}_x) / \text{width}_x) * \sin(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

- Tangent X Times Tangent Y [radians] (TangentX\_Times\_TangentY)

- Tangent X Times Tangent Y [radians]

$$z = \text{amplitude} * \tan(\pi * (x - \text{center}_x) / \text{width}_x) * \tan(\pi * (y - \text{center}_y) / \text{width}_y)$$

[amplitude, center\_x, width\_x, center\_y, width\_y]

- Tangent X Times Tangent Y [radians] With Offset

$$z = \text{amplitude} * \tan(\pi * (x - \text{center}_x) / \text{width}_x) * \tan(\pi * (y - \text{center}_y) / \text{width}_y) + \text{Offset}$$

[amplitude, center\_x, width\_x, center\_y, width\_y, Offset]

## 4.19 UserDefinedFunction

- User Defined Function (UserDefinedFunction)

- User Defined Function

$z = UserDefinedFunction$





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