## TRANSFORMS

### Quick Transforms

- Perform quick mathematical transforms provided in a function palette
- Automatic Updating of multiple transforms in worksheets
- Improved User Interface for the Quick Transforms dialog

### Mathematical Transforms

- Set worksheet row and column titles
- Root() and Implicit() functions
- 36 probability density and cumulative transforms
- Histogram
- Normalize ternary data
- Interpolate 3D mesh
- Sorting
- Fast Fourier transforms with filters
- Lowess smoothing
- Differential equations
- Data to RGB-color transform
- Trigonometric and algebraic functions
- Random and Gaussian random number generation
- Range, accumulation, precision, and more
- Transforms are now kept in notebook files as JNB files for easier organization of transforms; create transform libraries; associate transforms with data sets
- Protect and track changes to transforms for 21 CFR Part 11
- User-defined dialog is resizable and can be saved

## GENERAL FEATURES

### Unicode

- Text and symbols in different languages may be placed on the graph
- Broad support for Unicode in worksheets, graphs, and reports.

### Large, Scientific Worksheets

- Sample files in Help for graphs, statistics, macros, transforms, nonlinear regression
- 32,000 columns by 32,000,000 rows
- Handles numeric, text (categorical), and date & time data
- Multiple key column data sorting
- Insert color, symbols, line styles and bar patterns
- Independent graphically adjustable row height and column widths
- Missing data handling
- Data point sampling
- Graphical feedback of current curve and datapoint
- Text support of up to 256 characters
- Change the font type and grid colors
- Change font for worksheet
- Multiple Undo
- Format empty cells - formatted selected columns even if they do not contain data
- More flexible column titles allow for duplicates and numeric only titles
- Enhanced data/time recognition and more formats
- Arrow-key functionality is similar to that of Microsoft Excel
- Freeze Panes and print preview
- Multi-line editing - text wraps to fit the column while the row height automatically adjusts
- Find and replace data
- Mini tool bar for worksheet cell editing
- Zoom enabled worksheet
- Quick worksheet window scrolling with middle mouse wheel
- Formatted text in worksheet cells. Text in worksheet can contain super and subscripts, Greek letters, etc. and this can be used in tick labels

## SigmaPlot Notebook Manager

- Holds SigmaPlot worksheets, Excel worksheets, reports, regression wizard equations, graph pages, transforms and macros.
- Direct-editing of notebook summary information

## SigmaPlot Report Editor

- Insert tables with pre-defined styles or customize completely
- Copy/Paste tabular data both ways between the SigmaPlot report and Excel worksheet
- Zoom enabled report
- Vertical and horizontal rulers
- Ability to change the report background color
- Enhanced PDF export
- Drag and Drop Word 2007, Word 2010 & Word 2016 content directly to the report
- Cut and paste or use OLE to combine all the important aspects of your analysis into one document.
- Choose from a wide range of styles, sizes, and colors from any system font.
- Export to most word processors
- Add decimal tabs, tab leader, true date/time fields
- Auto-numbering

## Page Layout and Annotation Options

- 10 new Color Schemes
- Zoom, pan, +/- controls and zoom dialog & slider always available
- Ctrl-3 zoom toggle between current zoom and 100%
- Drag graph with "hand" mouse cursor
- Quick window scrolling with middle mouse wheel
- Direct graphic file import into graph page
- Real-time mouse-over XYand page coordinate feedback
- Click-through accessibility to select and edit graph objects buried under other items
- OLE 2 container and server
- Automatic or manual legends
- True WYSIWYG
- Multiline text editor
- Multiple curves and plots on one graph
- Multiple axes on one graph
- Arrange graphs with built-in templates
- Multiple levels of zooming and custom zooming
- Easily change the size and position of multiple selected objects simultaneously to layout and arrange graphs and other objects quickly
- Scale graph to any size
- Resize graphic elements proportionally with resizing graph
- Alignment and position tools
- Draw lines, ellipses, boxes, arrows with solid arrowheads
- Layering options
- Inset graphs inside one another
- Selection of graph objects
- Right-click property editing
- Color schemes
- Paste graphic objects from other programs
- Graph page rulers
- Adjustable snap-to grids

### "Picking from Column" Option

- Enter colors, patterns, symbols, line styles, tick mark intervals, tick labels and more directly into your worksheet to customize your graph the way you want. Transforms and "picking from column" allow you to create data dependent color gradients, symbols and sizes.

### Automate Routine and Complex Tasks

- Visual Basic compatible programming using built-in macro language interface

- Macro recorder to save and play-back operations
- Macro recorder to save and play-back operations
- Full automation object support - use Visual Basic to create your own SigmaPlot - based applications
- Run built-in macros or create and add your own scripts
- Add menu commands and create dialog
- Export graph to PowerPoint Slide
- Insert Graph to Microsoft Word' Toolbox macro
- New keyboard shortcuts in the Graph Properties and most Microsoft Excel keyboard shortcuts in the worksheet
- Macro language graph page measurement units specification
- Macro language automatic legend state specification

### Windows Application

- Excel, Word and PowerPoint for Office 2007, Office 2010, Office 2016 and Windows 7, Windows 10 support
- Tips and Tricks at startup
- OLE 2 container and server
- Use Excel worksheets inside SigmaPlot
- Right mouse button property editing
- Selection of objects on graph page
- Full precision and date/time Microsoft Excel copy and paste
- User settings are preserved from current to next SigmaPlot version

## IMPORT & EXPORT OPTIONS

### Import

- Directly import SAS data sets (.sd2 and .sas7bdat files) Directly import Minitab data sets (.mtw & .mpj files)
- Open Axon Binary, Axon Text, ASCII Plain, Comma and general import filter, 1-2-3, Symphony , Quattro , Excel, dBASE E, DIF, all
- SigmaPlot files through SigmaPlot 12, SigmaStat files (all versions), SYSTAT, SigmaScan Pro, Sigma Scan, SigmaScan Image, Mocha
- Import any ODBC compliant database
- Run SQLqueries on tables and selectively import information

### Export

- SAS files (.sd2 and .sas7bdat files)
- Minitab files (.mtw & .mpj files)
- ASCII Text, Tabbed, Comma, 1-2-3 , Excel, DIF, all SigmaPlot files though SigmaPlot 12, SigmaScan Pro
- PDF, PSD and HTMLexport of graphs and reports

### Import Graphics Options

- Load popular graphic file formats directly into SigmaPlot graphic page
- Import BMP, JPEG, GIF, TIFF, Cursor and Icon Files & many more
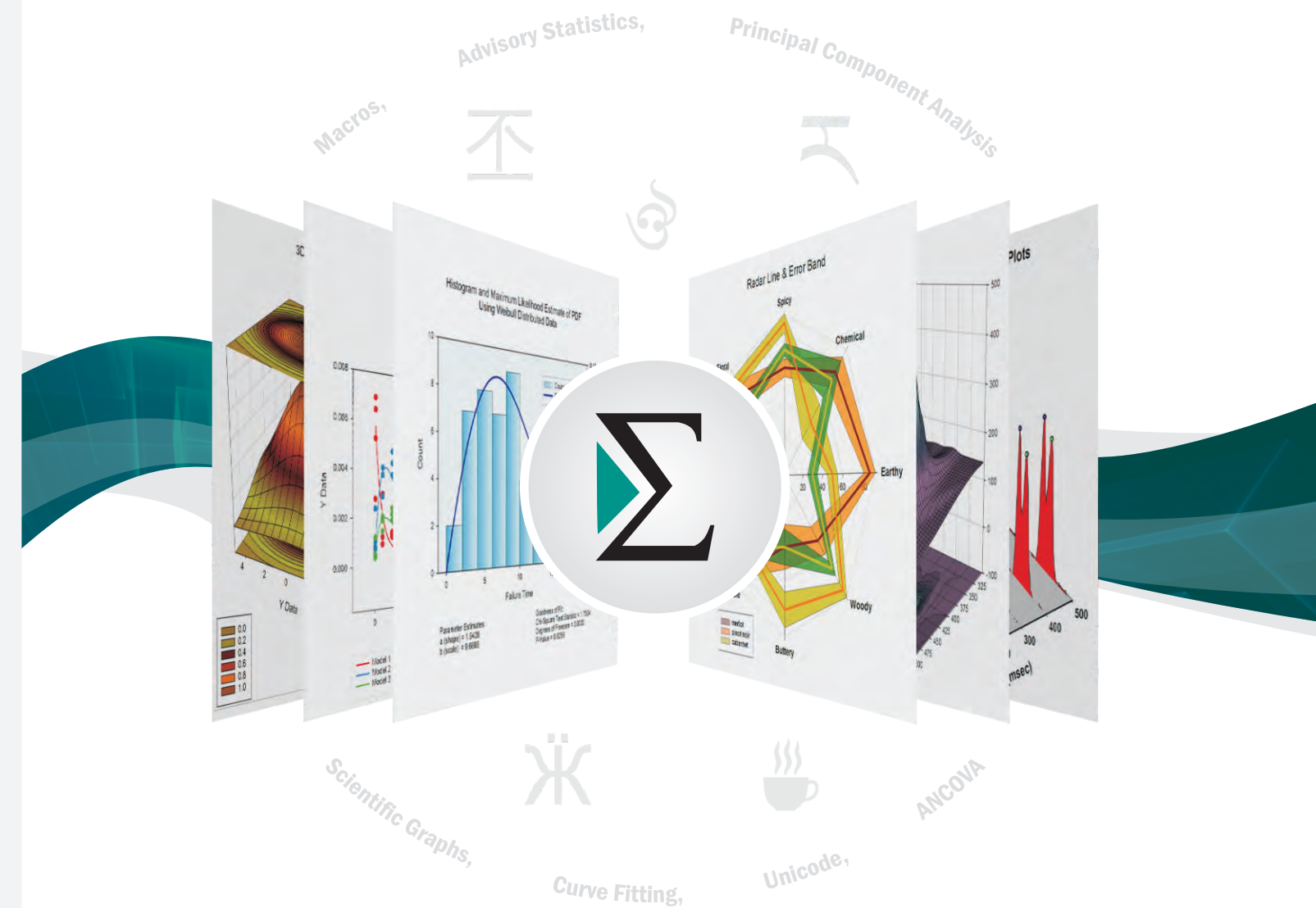
### Graph Export Options

- Export an individual graph, a group of graphs and objects or an entire page
- Different levels of resolution and color depths: PDF, EPS, TIFF, JPEG, EMF, BMP, PNG
- True color EPS vector and CMYK EPS export
- Compressed CMYK TIFF

### Publish as Web Page

- Export graphs as high-resolution Web objects
- WebViewer: free browser plug-in to view data used to create graph or print, pan and zoom in on graph without losing resolution
- The WebViewer supports IE 4.01 or higher. A screen resolution JPEG file is automatically displayed for browser applications and operating systems

> New features added to SigmaPlot 14 are high-lighted in red



# SigmaPlot 14

" Designed specifically to meet the needs of Engineers, Scientists & Professional Researchers "

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## Designed Specifically to Meet the Needs of the Scientists, Professional Researchers and Engineers

With an award-winning interface and intuitive wizard technology that guides users step-by-step through the graph creation and data analysis process, SigmaPlot provides the flexibility to create compelling graphs you simply can't get from a basic spreadsheet package.

**New Multiple Key Sorting**
Sort rows of the worksheet with multiple key columns.

**Huge Worksheet and Associated Programming Language**
32,000,000 rows and 32,000 columns. Vector-based computations with improved User-defined and Quick Transform dialogs.

**Powerful Curve Fitting**
Non-linear - 155 built-in functions Dynamic - Is your fit, the best fit? Global - Fit shared data sets.

**Plot Regression**
Create polynomial regression curves on an existing graph for one or more data sets. New statistics have been added.

**Macro Language**
Use built-in and user-defined macros to perform automated tasks.

**Complete Advisory Statistics with new features, including Welch's t-test and Frequency Tables**
Over 50 types of analysis with guidance for use. Assumption testing, multiple comparisons, and detailed reports.

**New Ribbon Configurations**
A variety of ribbon layouts for different types of workflows

**Result Graphs for Statistics**
Select specific types of graphs to represent statistical analysis results. Multiple graphs can be created simultaneously.

**Sample Files**
Sample Data Sets, Transforms, Graphs, and Equations with applications.

**Work Directly on the Graph Page**
Objects are selectable for modification. Mini-toolbars allow for direct changes.

**Unicode**
Add Unicode characters and symbols to worksheets, graphs, and reports

**Interactive Graph Wizard**
A step-by-step graph creation process

**Graph Gallery and Page Templates**
Create graphs and pages with preset properties that are reusable

**Notebook Manager**
Save multiple notebooks, pages, worksheets, reports, transforms, equations, and macros. Rearrange notebook items with drag-and-drop.

**Graph Properties**
The primary interface for editing graph objects on a page. All graph categories are displayed in a tree. The associated properties are displayed on the right.

**Zoom Controls**
Zoom in/out on views of pages, reports, and worksheets. Zoom on pages within a zoom window. New zoom toggle switches between current zoom level and 100%.

## New Graph Features

- Added a right mouse menu command for pasting copied graph primitives (arrow, box, etc.) on the page
- Data sampling drop down now shows the maximum number of rows in the column
- The "Each Curve" option is automatically turned on when performing a linear regression on one plot
- Improved access to result graphs following statistical analysis - obtained by right clicking either a statistical report or another result graph
- Text and special symbols options are now shown directly on the symbols dialog
- Arrows with solid arrowheads
- A Graph Templates button has been added to the Graph Page ribbon tab

## New Analysis Features

- The One-Way Frequency Tables method has been added
- The unpaired t-test now has the option to test the equality of the population means of the two groups without assuming equal variances (Welch's t-test)
- The command Ctrl - A now selects all program lines in user defined transforms
- More nonlinear regression application examples have been added that can now be accessed from the Help menu
- The User-Defined Transform and Regression Dialogs are Now Resizeable and can be Saved
- Improved User Interface for the Quick Transforms dialog

## New Worksheet Features

- Sorting data in the worksheet now supports multiple key columns
- Coefficient of Variation and 90% Confidence Interval added to Column Statistics
- Formatted text can now be used in statistical analyses
- Custom Column Statistics Items and Order May Now be Specified
- Statistical procedures may now use data from over 4000 worksheet columns

## New Miscellaneous Features

- Unicode is now supported
- User settings are now preserved for new versions of SigmaPlot
- Added new ribbon layouts for different types of workflows
- Sample Data Sets Available from Help
- New Macro Automation Method to Determine a Worksheet Column Length
- Data Can Now be Extracted from a Result Graph

## GRAPHING FEATURES

### 2D

- Forest Graphs - 2 Types
- Kernel Density - 5 Types
- Radar - 5 Types
- Dot Density - 4 Types
- Vector - 2 Types
- Area Plots - 4 Types
- Scatter - 14 Types, Line 4 Types, Scatter and Line - 10 Types
- Step - 8 Types
- Vertical and Horizontal Bar - 4 Types, Grouped Bar - 4 Types
- Vertical and Horizontal Stacked Bar
- Box - 2 Types
- Polar - 3 Types
- Contour, line and filled - 2 Types
- Histograms - 6 Types
- Ternary - 3 Types
- Bubble, Pie, Control Charts, Needle, High-low-close, Range,
- Quartile, Quadrant, Population

### 3D

- Multiple, intersecting plots with hidden line removal, smooth or discrete shading, transparent or opaque fills, and light source shading 3D rotation, Perspective preview, Scatter, Bar, 3D line - trajectory, Mesh - with or without contour projections Contour, Waterfall

### Create Graphs Easily

- Graph Style Gallery: Save any graph with all graph properties and add a bitmap image to the gallery to recreate complex graphs
- Graph Ribbons: select ribbon icon of the graph type and style you want to create a graph or to add additional curves to an existing
- Graph Wizard: easy to use, step-by-step wizard for sing you select a graph type and pick data
- Default graph settings: set preferences for graph options to create favorite graphs more easily
- Templates: create custom graph page templates to store for easy accessibility and future use

### Technical Axes

- Reciprocal (including Arrhenius), Weibull, Linear, Log10, Natural log, Probit, Logit, Probability, Ternary percentage, unary Polar (both clockwise and counter clockwise) Category (text data automatically binned into groups) Time and date, User-defined custom axis to create almost any scale

### Axis Features

- Control of display, thickness, color, range, and axis offset
- Multiple axes: Add Axis Wizard for creating multiple axes easily
- Ticks: customize major & minor intervals, in & out orientation, top & bottom location, length, thickness, color and tick mark selection from column to create custom axes
- Tick labels: customize prefix, suffix, numeric, and time & date
- Axis breaks: customize symbol, thickness, color, length, gap width, and post break interval

### Symbol Line and Fill Types

- Over 80 symbol types
- More line types for line plots and line scatter plots, free-form lines, boxes and ellipses
- 50 fill patterns for bar charts, box plots, pie charts, area plots and free-form boxes and ellipses

### Error Bars

- Mean, Median, First and last values for symbols
- Standard deviation, Standard error, Min and Max, First and Last entry
- 10th, 25th, 75th and 90% or 99% confidence
- Calculate error bars from replicate values across rows
- User-defined upper and lower error bar values
- One-way, two-way and asymmetric error bars
- Percentile method: 2 types

### Multiline Text Editor

- Control font, size, style, color, Greek, multiple levels of superscript and subscript, 360 degree rotation, left, right & center justification, and line spacing

### Function Plotter

- Automatic or manually created; lines and symbols on or off
- Plot functions on new or existing graphs
- Plot multiple different parameter values simultaneously
- Equation Solver: solve equations or functions containing a single independent variable and any number of parameters

## USER INTERFACE FEATURES

- New ribbon layouts for efficient use
- Rearrange Notebook items by dragging
- New SigmaPlot tutorial PDF file
- Line widths from a worksheet column
- New SVG, SWF and vector PDF graphics export file formats
- File import and export support is added for V 13 and 14 of Minitab, V9 of SAS, and V19 of SPSS

### Microsoft Office Style Ribbons

- Context sensitive feature grouping for enhanced functionality and ease of use.
- Expanded tooltips that include hot keys.
- Alt Key Tips provide visual display of keyboard shortcuts

### Graph Property Redesign

- New graph object and property browser. Object selection in the graph is displayed in the object window and the object's proper-ties displayed in the property window.
- Dynamic Update provides immediate graph redraw with property change. No Ok or apply button press required
- Property group styles may be copied and applied across like groups thus simplifying property specification
- New window show/hide buttons for window real-estate management

### User Interface Improvements

- New tabbed window views enable quick window management (selection, closing, and grouping)
- New docking panel guides providing simple window placement. This includes the Graph Gallery, Templates, Layouts, Object and Properties windows.
- Group open windows into tabbed groups either vertically or horizontally. This collects like windows for easy comparison and better window management.
- Object-specific mini toolbars are displayed adjacent to selected graph, worksheet and report objects. This allows rapid editing of object properties. Left mouse selection may be turned off.
- Customizable Quick Access Toolbar for frequently used user specific commands

### Grids and Fills

- Control of color, line type, thickness, and display of major & minor grids in X, Y, & Z direction
- Control of pattern and edge color, pattern style, pattern density and edge thickness Symbols

### Reference Lines

- Control mean, standard deviation, standard error, user-defined constants, and 95% and 99% confidence intervals
- Up to 5 horizontal or vertical lines
- Control of color, line type, and thickness

### Drop Lines

- Display in any or all X, Y and Z directions

### Antialiasing for Smooth Lines

- Button in Format Group, Graph Page tab

### Legends

- Horizontal, vertical and rectangular legend shapes
- Simple direct labels that move with the graph
- Automatic or manually created; lines and symbols on or off
- Legends for regressions, confidence, and prediction intervals
- Place line and symbol before or after text

## DATA ANALYSIS FEATURES

### Enzyme Kinetics Module

- Analyze multiple models and rank by best fit
- Create multiple enzyme kinetics graphs: Michaelis-Menten, Lineweaver-Burk, Eadie-Hofstee, Scatchard, Hanes-Woolf, Hill, and Dixon

### Regression Wizard

- 24 probability function models
- 7 built-in weighting functions for each model
- Akaike information criterion computation
- Linear and nonlinear regressions
- 2, 3, 4, and 5-segment piecewise-linear models
- Over 150 built-in, graphically-illustrated equations
- Marquardt-Levenberg algorithm with up to 50 independent variables and 500 parameters. Resizable equation edit dialog which can be saved.
- Define tolerance, step size and iterations
- Define linear constraints and fix parameters to a constant value
- Automatically determines your initial parameters
- Writes a complete statistical report to your SigmaPlot Notebook
- Automatically graphs your results on new or existing graphs
- Option to add 95 or 99% confidence and prediction bands to a results graph
- Optional Reduced Chi-Square Regression weighting
- Customize the SigmaPlot fit library or create your own fit functions
- Generalized weight variables: predicted values, robust regression
- Parameter covariance matrix and confidence intervals in report
- Predicted values defined implicitly by the fit model

### Dynamic Fit Wizard

- Solves difficult curve fitting problems by finding local and global fit solutions
- Selects many initial maximally-distant starting parameter sets and ranks the resulting fits
- Shows the local minima with a Dynamic Fit Profile graph

### Global Fit Wizard

- Fit multiple data sets using shared parameters

### Automatic Plot Regressions

- Up to 10th order with confidence and prediction intervals and regression statistics
- Additional Plot Regression statistics

### Column Descriptive Statistics Generated Automatically

- Choose which statistics to display and in desired order

## STATISTICS

- One-way Frequency Tables
- Principal Components Analysis (PCA)
- Analysis of Covariance (ANCOVA)
- Over 50 of the most frequently used statistical tests to analyze scientific data. Use data from up to 4000 worksheet columns
- Advisor Wizard guides you through the process of choosing the appropriate statistical test
- Report generation that translates the statistics into plain and simple English
- Descriptive statistics
- Non-parameter tests: t-tests, ANOVA
- Welch's t-test assuming unequal variances
- One-way, two-way, three-way ANOVA
- Repeated measures
- Rates and proportions
- Regression, including Linear, Stepwise, Best Subsets, Polynomial and Logistic
- Correlation
- Survival analysis (Kaplan-Meir, Cox Regression)
- Power and sample size analysis
- One sample signed rank test
- Deming regression for errors in both x and y
- Normal distribution comparison for QC analysis
- Parallel line analysis
- Bland-Altman analysis for method comparison

**Results Graphs from Statistics**
- Multiple graphs may be generated simultaneously
- Obtained from right click on statistical report or other Results Graph
- Scatter Matrix now with 40 variables
- Improved default appearance of Result Graphs

## SMOOTHING

### 2D & 3D Smoothing Routines

- Negative exponential, Running average, Loess, Running median, Bisquare, Inverse square, Inverse distance (for 3D smoothing)