

Reactor and Nuclear Systems Division

Javapeño

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ABSTRACT

Javapeño (**Java Plots, Especially Nice Output**) is an interactive two-dimensional (2D) and three-dimensional (3D) plotting package that is written in Java and operates on numerous computing platforms. Javapeño enables the plotting of data from TSUNAMI-A and TSUNAMI-B sensitivity data files, KENO V.a and KENO-VI data files generated with KMART and KMART6, XSDRNPM data files, and SMORES data files. Javapeño allows for visualization of data directly from binary AMPX master and working formatted cross-section data libraries and from binary COVERX formatted cross-section-covariance data libraries. New for SCALE 6.1, Javapeño includes visualization capabilities for ENDF-VI and ENDF-VII continuous energy libraries as well as OPUS plot files of activation and decay data. Javapeño enables the user to manipulate data in an intuitive manner and provides a viewport for examining underlying physical processes.

CONTENTS

	<u>Page</u>
ABSTRACT.....	M20.iii
LIST OF TABLES.....	M20.xi
ACKNOWLEDGMENTS.....	M20.xiii
M20.1 INTRODUCTION.....	M20.1.1
M20.2 BRIEF OVERVIEW.....	M20.2.1
M20.3 SYSTEM REQUIREMENTS.....	M20.3.1
M20.3.1 REQUIRED.....	M20.3.1
M20.3.2 RECOMMENDED.....	M20.3.1
M20.4 MENUS.....	M20.4.1
M20.4.1 FILE.....	M20.4.1
M20.4.2 NEW PLOT.....	M20.4.2
M20.4.2.1 Open Dataset.....	M20.4.2
M20.4.2.2 Open Plot.....	M20.4.3
M20.4.2.3 Open Contour Plot.....	M20.4.3
M20.4.2.4 Open Continuous Energy Data.....	M20.4.3
M20.4.2.5 Save Current Configuration.....	M20.4.4
M20.4.2.6 Reload Configuration File.....	M20.4.4
M20.4.2.7 Reset Configuration File.....	M20.4.4
M20.4.2.8 Export.....	M20.4.5
M20.4.2.8.1 Plots.....	M20.4.5
M20.4.2.8.2 Tables.....	M20.4.7
M20.4.2.9 Page Setup.....	M20.4.8
M20.4.2.10 Privt.....	M20.4.8
M20.4.2.11 Exit.....	M20.4.8
M20.4.3 OPTIONS.....	M20.4.9
M20.4.4 FORMAT.....	M20.4.10
M20.4.5 WINDOW.....	M20.4.10
M20.4.6 HELP.....	M20.4.11
M20.5 PLOTS.....	M20.5.1
M20.5.1 TSUNAMI SENSITIVITY DATA.....	M20.5.1
M20.5.2 KENO V.A AND KENO-VI DATA.....	M20.5.1
M20.5.3 XSDRNPM DATA.....	M20.5.2
M20.5.4 SMORES DATA.....	M20.5.3
M20.5.5 ICSBEP SENSITIVITY DATA.....	M20.5.3
M20.5.6 CROSS-SECTION-COVARIANCE DATA.....	M20.5.4
M20.5.7 CROSS-SECTION DATA.....	M20.5.4
M20.5.8 GENERAL 2D PLOT DATA.....	M20.5.4
M20.5.8.1 Sensitivity Plot.....	M20.5.8
M20.5.8.2 Line Plot.....	M20.5.10

CONTENTS (continued)

	<u>Page</u>
M20.5.8.3	Bar Chart M20.5.13
M20.5.9	GENERAL 3D PLOT DATA M20.5.16
M20.5.9.1	Example General 3D Datafile and Plot M20.5.18
M20.6	CUSTOMIZED PLOTS M20.6.1
M20.6.1	SET PLOT FORMAT M20.6.1
M20.6.2	AXES (2D) M20.6.1
M20.6.3	PLOT OPTIONS (2D) M20.6.2
M20.6.4	PLOT OPTIONS (3D) M20.6.3
M20.6.5	PLOT TITLES (2D) M20.6.4
M20.6.6	PLOT TITLES (3D) M20.6.5
M20.6.7	PLOT RANGES (2D) M20.6.6
M20.6.8	PLOT RANGES (3D) M20.6.6
M20.6.9	PLOT ROTATION (3D ONLY) M20.6.7
M20.6.10	SET LEGEND FORMAT (2D ONLY) M20.6.8
M20.6.11	LEGEND PLACEMENT (2D ONLY) M20.6.9
M20.6.12	FONTS FOR SELECTED PLOT (2D) M20.6.9
M20.6.13	FONTS FOR SELECTED PLOT (3D) M20.6.10
M20.6.14	DATASET OPTIONS M20.6.10
M20.6.15	PROFILE INFORMATION (2D ONLY) M20.6.11
M20.6.16	ZOOMING (2D) M20.6.12
M20.6.17	ZOOMING (3D) M20.6.13
M20.6.18	PANNING (3D ONLY) M20.6.13
M20.6.19	ROTATING (3D ONLY) M20.6.13
M20.6.20	PLOT OPERATIONS (2D ONLY) M20.6.13
M20.7	POP-UP MENUS M20.7.1
M20.7.1	SINGLE-SELECTION POP-UP M20.7.1
M20.7.2	MULTIPLE-SELECTION POP-UP M20.7.2
M20.7.3	LEGEND POP-UP (2D ONLY) M20.7.3
M20.7.4	PLOT POP-UP (2D) M20.7.4
M20.7.5	PLOT POP-UP (3D) M20.7.5
M20.8	REACTION LISTS M20.8.1
M20.8.1	TREE M20.8.1
M20.8.2	FILTERABLE LIST M20.8.2
M20.9	CONFIGURATION FILE EDITOR M20.9.1
M20.9.1	JAVAPEÑO OPTIONS M20.9.3
M20.9.2	2D OPTIONS M20.9.5
M20.9.3	2D FONT OPTIONS M20.9.7
M20.9.4	3D OPTIONS M20.9.9
M20.9.5	3D FONT OPTIONS M20.9.11

CONTENTS (continued)

	<u>Page</u>
M20.10 KNOWN ISSUES	M20.10.1
M20.10.1 CONFIGURING JAVA FOR 3D PLOTTING	M20.10.2
M20.10.2 SPECIAL APPLET INSTRUCTIONS.....	M20.10.3

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
M20.2.1. Javapeño application with data file loaded.....	M20.2.1
M20.2.2. Javapeño application with plots drawn.....	M20.2.2
M20.4.1. Javapeño menus.....	M20.4.1
M20.4.2. Javapeño file menu.....	M20.4.1
M20.4.3. Javapeño new plot menu item.....	M20.4.2
M20.4.4. Continuous energy data dialog.....	M20.4.4
M20.4.5. Export file chooser for plots.....	M20.4.5
M20.4.6. Options for JPEG export.....	M20.4.6
M20.4.7. Options for TIFF export.....	M20.4.6
M20.4.8. Options for BMP export.....	M20.4.7
M20.4.9. Options for PNG export.....	M20.4.7
M20.4.10. Export file chooser for tables.....	M20.4.8
M20.4.11. Options menu.....	M20.4.9
M20.4.12. Format menu.....	M20.4.10
M20.4.13. Window menu.....	M20.4.10
M20.4.14. Help menu.....	M20.4.11
M20.5.1. Sensitivity plot data file.....	M20.5.8
M20.5.2. Sample Javapeño sensitivity plot.....	M20.5.9
M20.5.3. Line plot data file.....	M20.5.10
M20.5.4. Sample Javapeño line plot.....	M20.5.12
M20.5.5. Bar chart data file.....	M20.5.13
M20.5.6. Sample Javapeño bar chart.....	M20.5.16
M20.5.7. Example 3D datafile.....	M20.5.18
M20.5.8. Dataset 1 from example 3D datafile.....	M20.5.19
M20.5.9. Dataset 2 from example 3D datafile.....	M20.5.20
M20.6.1. Plot axes formatting dialog for 2D plots.....	M20.6.1
M20.6.2. Plot options formatting for 2D plots.....	M20.6.2
M20.6.3. Plot options formatting for 3D plots.....	M20.6.3
M20.6.4. Plot titles formatting for 2D plots.....	M20.6.4
M20.6.5. Plot titles formatting for 3D plots.....	M20.6.5
M20.6.6. Plot ranges formatting for 2D plots.....	M20.6.6
M20.6.7. Plot ranges formatting for 3D plots.....	M20.6.7
M20.6.8. Plot rotation formatting for 3D plots.....	M20.6.7
M20.6.9. Legend formatting dialog for 2D plots.....	M20.6.8
M20.6.10. Font formatting dialog for 2D plots.....	M20.6.9
M20.6.11. Font formatting dialog for 3D plots.....	M20.6.10
M20.6.12. Dataset options dialog.....	M20.6.10
M20.6.13. Profile information dialog for 2D plots with positive and negative values on a logarithmic y-axis.....	M20.6.11
M20.6.14. Profile information dialog for 2D plots.....	M20.6.12
M20.6.15. Javapeno calculator.....	M20.6.13
M20.6.16. Javapeno calculator with information populated.....	M20.6.14
M20.6.17. Javapeño calculator dialog for 2D plots.....	M20.6.14
M20.7.1. Single-selection pop-up for 2D plots.....	M20.7.1

LIST OF FIGURES (continued)

<u>Figure</u>		<u>Page</u>
M20.7.2.	Single-selection pop-up for 3D plots.....	M20.7.1
M20.7.3.	Multiple-selection pop-up.	M20.7.2
M20.7.4.	Legend pop-up for 2D plots.	M20.7.3
M20.7.5.	Plot pop-up for 2D plots.	M20.7.4
M20.7.6.	Plot pop-up for 3D plots.	M20.7.5
M20.8.1.	Tree for AMPX data.....	M20.8.1
M20.8.2.	Filterable list.....	M20.8.2
M20.9.1.	Configuration file editor.....	M20.9.1
M20.9.2.	Javapeño options in configuration file editor.....	M20.9.3
M20.9.3.	2D options in configuration file editor.....	M20.9.5
M20.9.4.	2D font options in configuration file editor.....	M20.9.7
M20.9.5.	3D options in configuration file editor.....	M20.9.9
M20.9.6.	3D font options in configuration file editor.....	M20.9.11
M20.10.1.	Digital signature dialog for Javapeño applet.....	M20.10.3
M20.10.2.	More information dialog for digital signature for Javapeño applet.....	M20.10.4

LIST OF TABLES

<u>Table</u>		<u>Page</u>
M20.5.1.	Commonly used reactions	M20.5.2
M20.5.2.	Plot options keywords for general 2D datafile	M20.5.5
M20.5.3.	Dataset keywords for general 2D datafile	M20.5.6
M20.5.4.	Data value keywords for general 2D datafile	M20.5.7
M20.5.5.	Keywords for general 3D datafile	M20.5.17

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M20.1 INTRODUCTION

Javapeño (**Java Plots, Especially Nice Output**) is an interactive two-dimensional (2D) and three-dimensional (3D) plotting package that is written in Java and operates on numerous computing platforms. Javapeño enables the plotting of data from TSUNAMI-A and TSUNAMI-B sensitivity data files, KENO V.a and KENO-VI data files generated with KMART and KMART6, XSDRNPM data files, and SMORES data files. Javapeño allows for visualization of data directly from binary AMPX master and working formatted cross-section data libraries and from binary COVERX formatted cross-section-covariance data libraries. New for SCALE 6.1, Javapeño includes visualization capabilities for ENDF-VI and ENDF-VII continuous energy libraries as well as OPUS plot files of activation and decay data. Javapeño enables the user to manipulate data in an intuitive manner and provides a viewport for examining underlying physical processes. Javapeño executes on any system with a Java Virtual Machine (JVM) version 1.5 or newer installed. Java3D components are required for 3D plotting and Java Advanced Imaging components are required for image exporting. The required installation files are distributed with SCALE 5.1 for Windows XP PCs. Current versions of the JVM for many operating are available from Sun Microsystems at <http://java.com/en/download/manual.jsp>. Implementations of JVM for other platforms may be available from the manufacturer.

M20.2 BRIEF OVERVIEW

This section briefly describes how to launch Javapeño and how to access the key features available in Javapeño. Subsequent sections, and the Javapeño interactive help, provide more details of the operations of the application.

Once a current version of the JVM is installed, the user can launch the application by either double-clicking the javapeno.jar file, or by running the javapeno.bat file or javapeno.sh script as appropriate for the particular computing environment, or by simply pressing the Javapeño button in GeeWiz. Additionally, Javapeño can be launched by typing “javapeno” at the command prompt where the user executes SCALE.

Once Javapeño launches, a window with a Javapeño graphic will appear in the center of the screen, and a menu bar will appear across the top of the screen. SCALE files can be opened by selecting **Open Dataset...** from the **File** menu. Once a SCALE file is open, a list of data available for plotting will appear in a window titled **Reaction List** on the right side of the screen as illustrated in Figure M20.2.1.

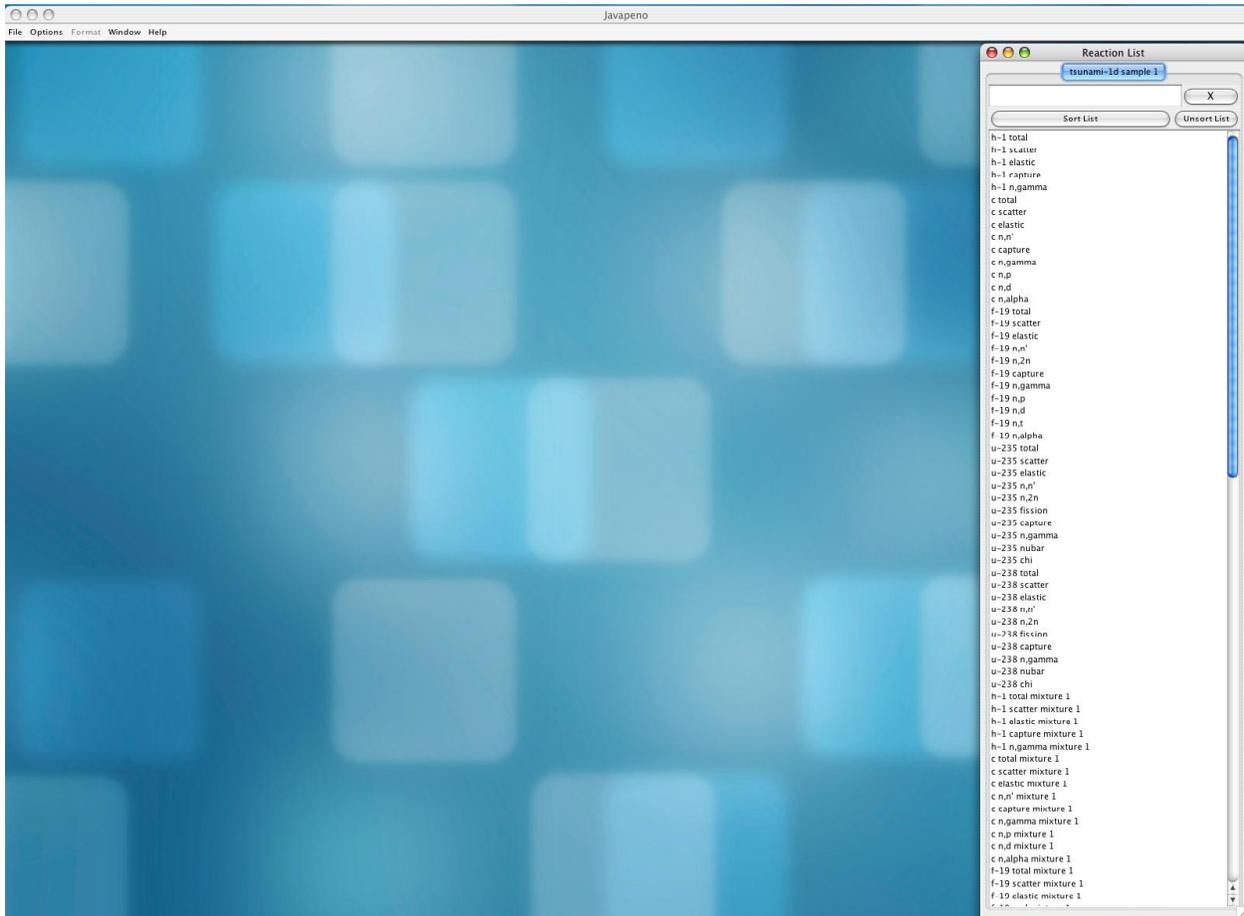


Figure M20.2.1. Javapeño application with data file loaded.

Double-clicking on an item in the list of data available for plotting creates a new plot window and plots the data using the default settings for the particular type of data loaded, as illustrated in Figure M20.2.2. To add more data to the existing plot, simply double-click on another item in the list. To create a second plot, hold down the **Ctrl** key on the keyboard while double-clicking on an item in the list, or right-click an item in the list for more options.

Plots generated with Javapeño can be exported as graphics file using **Export...** from the **File** menu. Printing directly from Javapeño is also supported. When exporting or printing, only the currently selected plot is processed.

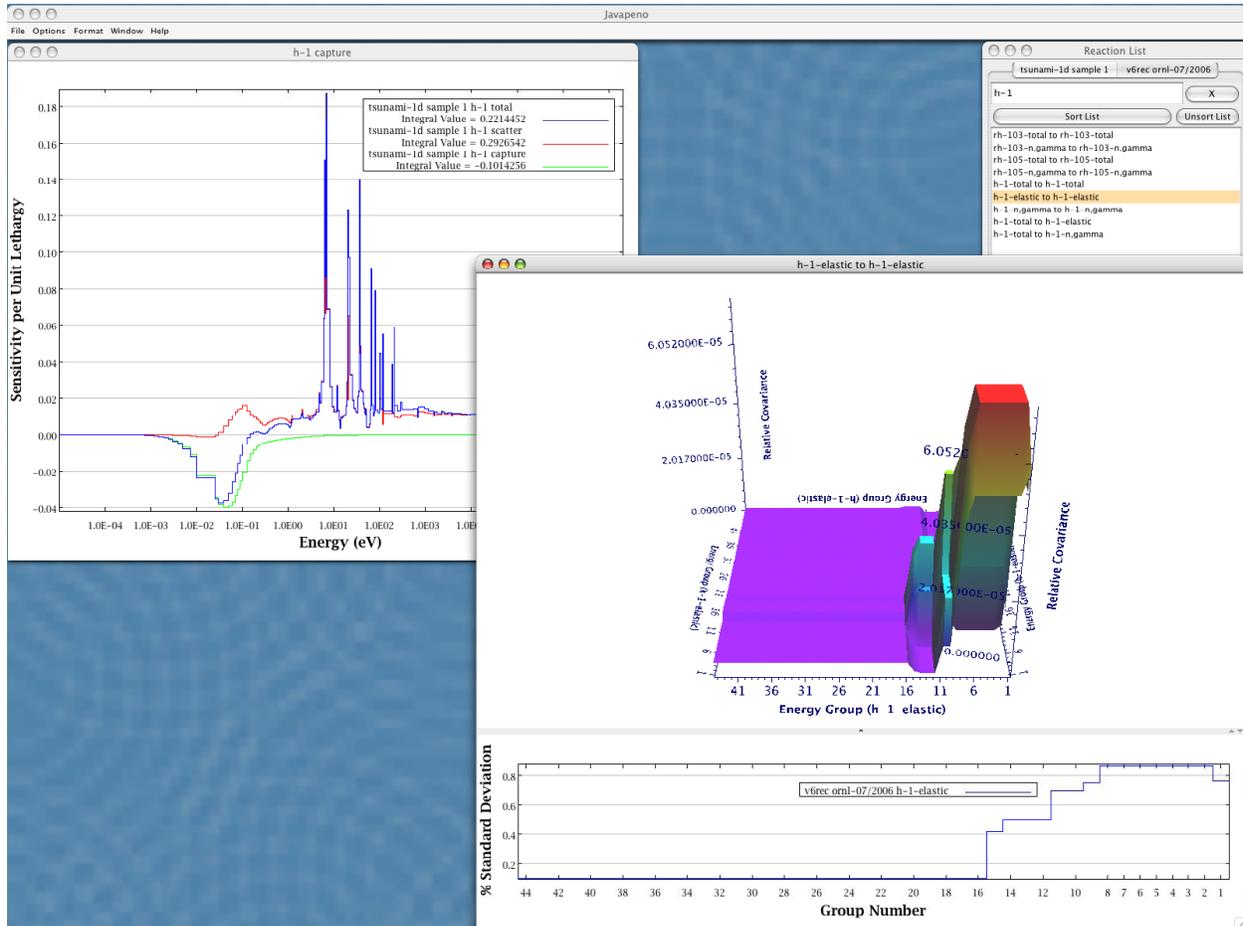


Figure M20.2.2. Javapeño application with plots drawn.

Many features of Javapeño can be customized through user interaction. Items available under the **Format** menu control the customization of the look of the plot. Also, right-clicking or double-clicking on **2D plots** or shift-right-clicking of **3D plots** provides a pop-up menu where options can be set. Double-clicking on the tab for a particular data file in the **Reaction List** window activates a dialog where the title used for the data can be modified, or the data file can be removed. Javapeño allows for multiple data files to be open concurrently, so that data from different models can be plotted together. The list of data available for plotting on the right hand of the screen corresponds to the currently selected data file.

M20.3 SYSTEM REQUIREMENTS

Javapeño has the following system requirements:

M20.3.1 REQUIRED

1. Java supported operating system (OS) and processor. Please see Java's list of supported architectures at <http://java.sun.com/j2se/1.5.0/system-configurations.html>. If your architecture is not listed, check your hardware manufacturer's website. For example, Apple and HP are known to release their own port of Java.
2. Java 1.5.x+ must be installed. Only the runtime environment (JRE) is required.
3. Java 3D 1.31+ must be installed.
4. Java Advanced Imaging (JAI) 1.12+ must be installed.
5. 30MB of RAM free to run Javapeño.
6. Java 3D supported video card (to plot 3D data).

For a more enjoyable Javapeño experience, the following system specifications are recommended if plotting 3D data.

M20.3.2 RECOMMENDED

1. 512 MB+ of free RAM
2. 1.4 GHz+ processor
3. Java 3D 1.4+

M20.4 MENUS

The functionalities of the five Javapeño menus, shown in Figure M20.4.1, are described in this section.

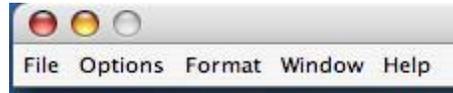


Figure M20.4.1. Javapeño menus.

M20.4.1 FILE

The **File** menu contains thirteen items, as shown in Figure M20.4.2.

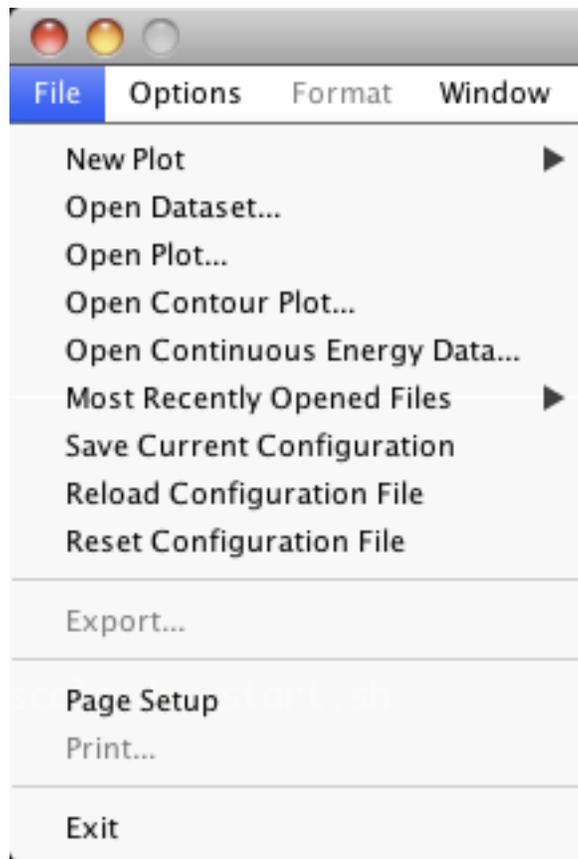


Figure M20.4.2. Javapeño file menu.

M20.4.2 NEW PLOT

The **New Plot** item activates a submenu, shown in Figure M20.4.3, for creating a new plot with default formatting.

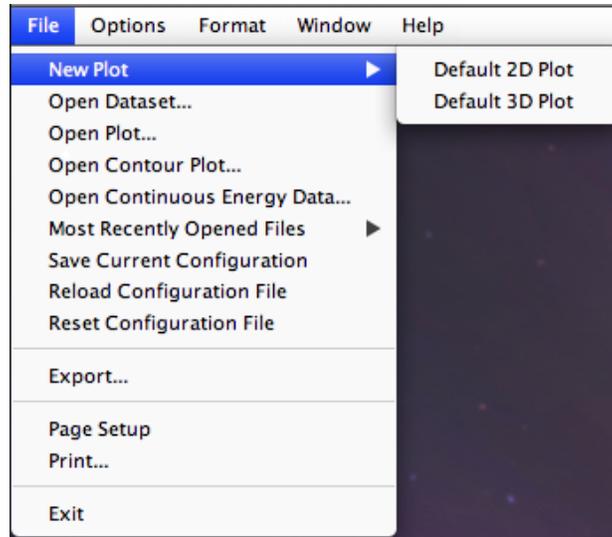


Figure M20.4.3. Javapeño new plot menu item.

The **Default 2D Plot** item creates a blank 2D plot with linear axes.

The **Default 3D Plot** item creates a blank 3D plot.

M20.4.2.1 Open Dataset...

The **Open Dataset...** menu item opens a dialog box where data files in the supported data formats can be loaded into Javapeño.

Supported data file formats are:

- TSUNAMI Sensitivity Data (default extension .sdf)
 - TSUNAMI-1D data in TSUNAMI-A format
 - TSUNAMI-3D data in TSUNAMI-B format
- KENO V.a and KENO-VI Data (default extension .kmt)
 - KMART data files from KMART and KMART6
- XSDRNPM Data (default extension .idf)
 - Data generated in Input Dump File, Balance Table File, and Activity Data File
- SMORES Data (default extensions .plotd and .plote)
 - Effectiveness functions and density functions
- ICSBEP Sensitivity Data (no default extension)
 - International Handbook of Evaluated Criticality Safety Benchmark Evaluations sensitivity data
- General 2D Plot Data (default extension .plt)
 - General 2D data format
- Cross-Section-Covariance Data (no default extension)

- Multigroup cross-section covariance data
- Cross-Section Data (no default extension)
 - Multigroup cross-section data
- General 3D Plot Data (default extension .j3d)
 - General 3D data format

Once a file is opened, a window appears presenting the user with the data available for plotting. If cross-section data were loaded, then the data are presented as a tree. All other data are presented in a filterable list. If multiple files are opened, a series of tabs are presented where each tab is used to show the data available in a single data file. The presented data are only for the active tab. The look of the tabs is system dependent. Typically, the active tab is brighter than the inactive tabs.

M20.4.2.2 Open Plot...

The **Open Plot...** item is used to load a pre-existing plot. The user selects a plot file from a dialog box. The plot is opened in a new plot window. The format of the plot file is described in Sect. M20.6.8. The default extension for Javapeño plot files is .plt.

M20.4.2.3 Open Contour Plot...

The **Open Contour Plot...** item is a beta plotting capability for an undefined NEWT post-script output replacement. This capability is not fully defined.

M20.4.2.4 Open Continuous Energy Data

The **Open Continuous Energy Data** item opens a dialog as shown in Figure M20.4.4. The user may select an element defined in the *Symbols* list, which loads the available continuous energies by *Temperature*. The user may then select multiple temperatures and **Load Selection**. This action populates the **Reaction List** with relevant continuous energy given the selected *library*, *symbol* and *temperatures*.

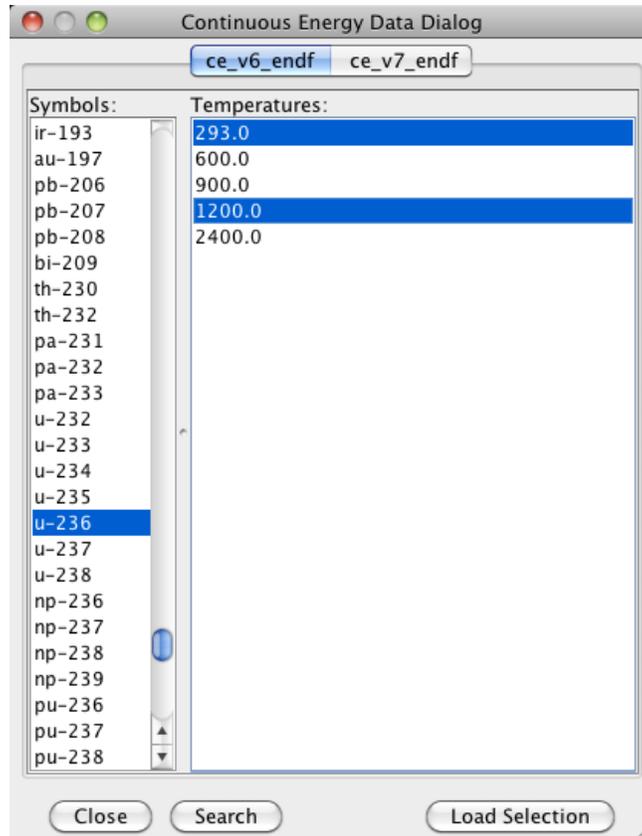


Figure M20.4.4. Continuous energy data dialog.

M20.4.2.5 Save Current Configuration

The **Save Current Configuration** option opens the Configuration File Editor dialog with the current configuration settings loaded. Within this dialog, the user has the option to change and save settings.

M20.4.2.6 Reload Configuration File

The **Reload Configuration File** option loads the settings stored in the configuration file into memory. This will only affect new objects.

M20.4.2.7 Reset Configuration File

The **Reset Configuration File** (over)writes the configuration file with the default settings. The configuration settings are then reloaded from the file. This will only affect new objects (such as plots).

M20.4.2.8 Export...

The **Export...** menu item is used for exporting information to a datafile.

M20.4.2.8.1 Plots

If a plot is currently selected, the **Export...** item is used to export a plot to a graphics file. The plot that is currently selected is rendered as a JPEG, TIFF, BMP, or PNG formatted file.

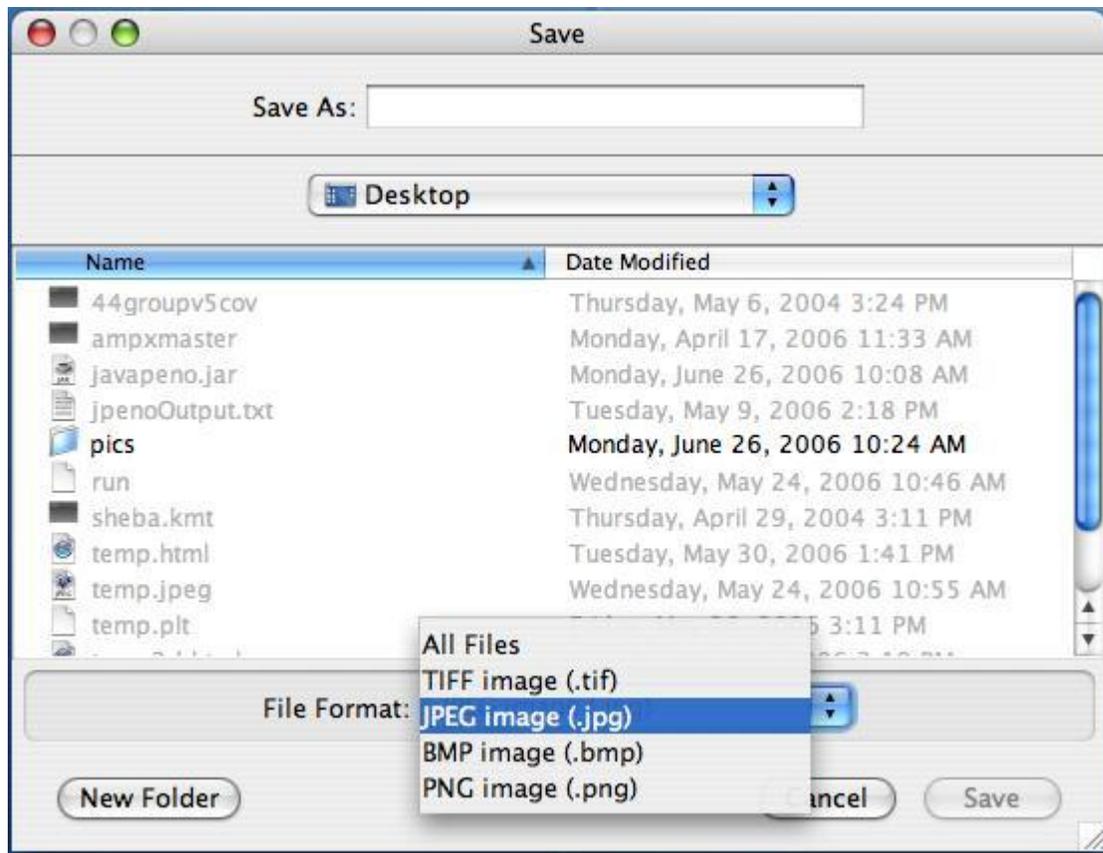


Figure M20.4.5. Export file chooser for plots.

The format for the exported file is selected from the **File Format** item in the **Save** dialog box shown in Figure M20.4.5. An appropriate file extension (.jpg, .tif, .bmp, or .png) is added to the filename entered in the **Save As:** field if one is not entered. Options for formatting the files are presented after clicking the **Save** button.

For JPEG images, the resolution and quality of the image can be set in the following dialog shown in Figure M20.4.6. If the **Fixed Aspect Ratio** option is selected, the ratio between width and height is maintained when one of the fields is modified.

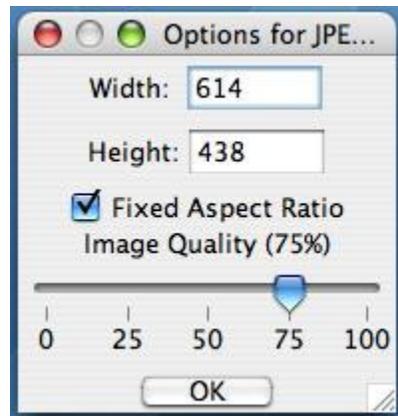


Figure M20.4.6. Options for JPEG export.

For TIFF images, the resolution and compression algorithm can be set in the dialog box shown in Figure M20.4.7. If the **Fixed Aspect Ratio** option is selected, the ratio between width and height is maintained when one of the fields is modified.



Figure M20.4.7. Options for TIFF export.

For BMP images, the resolution can be set in the dialog box shown in Figure M20.4.8. Currently, only BMP version 3 is supported. If the **Fixed Aspect Ratio** option is selected, the ratio between width and height is maintained when one of the fields is modified.

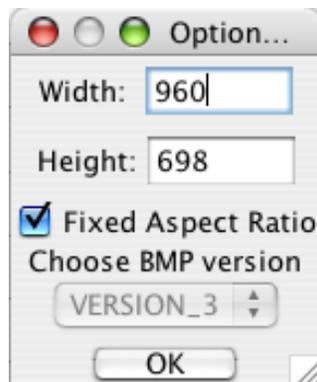


Figure M20.4.8. Options for BMP export.

For PNG images, the resolution can be set in the dialog box shown in Figure M20.4.9. If the **Fixed Aspect Ratio** option is selected, the ratio between width and height is maintained when one of the fields is modified.



Figure M20.4.9. Options for PNG export.

M20.4.2.8.2 Tables

The **Export...** item is used to export a table to a tab separated text file. A table of values from any plot may be created by right-clicking on a 2D plot or shift+right-clicking on a 3D plot and selecting “**create table**” from the pop-up menu.

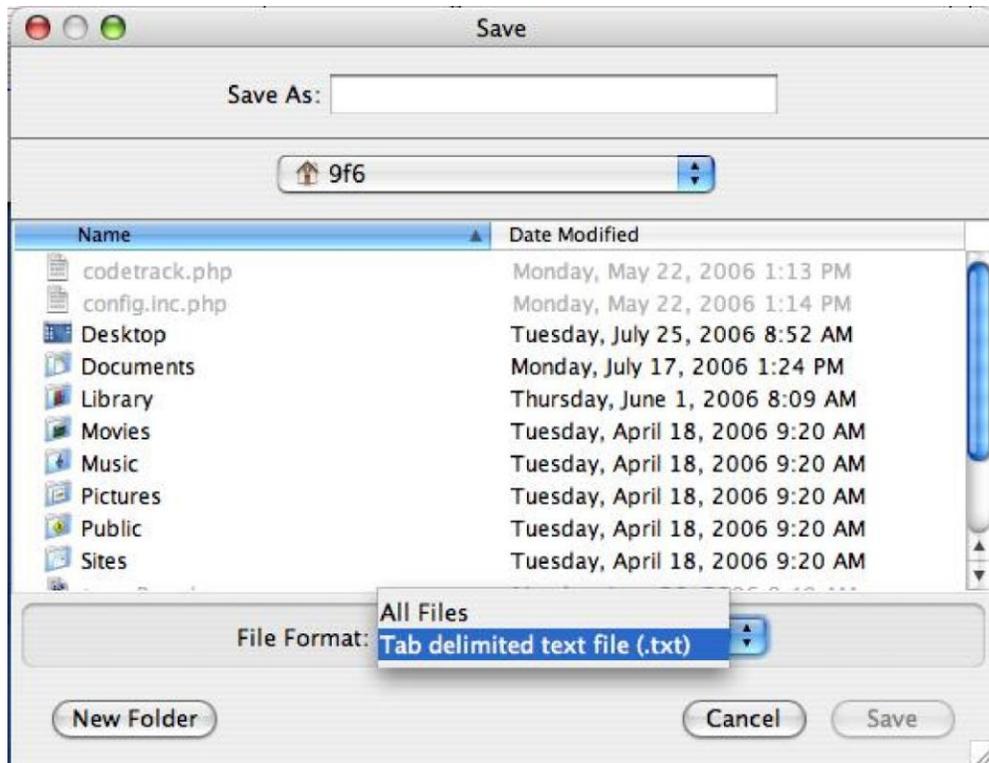


Figure M20.4.10. Export file chooser for tables.

The format for the exported file is selected from the **File Format** item in the **Save** dialog box shown in Figure M20.4.10. Currently, only the tab delimited text file (.txt) is supported. An appropriate file extension (.txt) is added to the filename entered in the **Save As:** field if one is not entered.

M20.4.2.9 Page Setup

The **Page Setup** menu item allows the user to configure the paper size, source, orientation, margins, and printer.

M20.4.2.10 Print...

The **Print...** menu item allows the user to print the currently selected plot to a printer. Color printing is supported.

M20.4.2.11 Exit

The **Exit** menu item quits Javapeño.

M20.4.3 OPTIONS

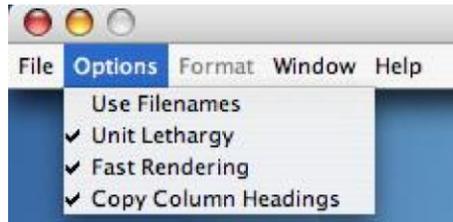


Figure M20.4.11. Options menu.

Four options are available in the **Options** menu.

If **Use Filenames** is checked, the name of the data file will be used in place of the title on the data file for new files that are opened. The name of a single file can be changed by double-clicking on its tab after it is opened.

If **Unit Lethargy** is checked, the data on a new plot created with a logarithmic x-axis will be divided by the unit lethargy of the x variable. This option is available for normalizing data that is computed with a multigroup energy structure, such as the TSUNAMI and ICSBEP sensitivity data, KMART data from KENO V.a and KENO-VI and XSDRNPM energy-dependent data.

Lethargy is defined as

$$u = \ln\left(\frac{E_m}{E}\right),$$

where E_m is the maximum energy considered.

For multigroup energy variables, the unit lethargy is defined as the change in lethargy across the energy group as

$$\Delta u_g = \ln\left(\frac{E_m}{E_{g+1}}\right) - \ln\left(\frac{E_m}{E_g}\right) = \ln(E_g) - \ln(E_{g+1}),$$

where E_g and E_{g+1} are the maximum energies in groups g and $g+1$, respectively.

If **Fast Rendering** is checked, the data on lego plots will be rendered using a faster algorithm. NOTE: Fast rendering uses more memory. If memory use is a concern, make sure this is not selected. This item is selected by default.

If **Copy Column Headings** is checked, the table column headings are copied with the column data when copying from a table. This is selected by default.

M20.4.4 FORMAT

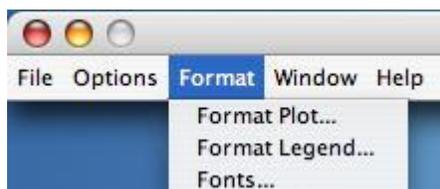


Figure M20.4.12. Format menu.

Three options are available under the **Format** menu as shown in Figure M20.4.12.

The **Format Plot...** item activates the Set Plot Format dialog for the selected plot.

The **Format Legend...** item activates the **Set Legend Format** dialog for the selected plot.

The **Fonts...** item activates the **Fonts for Selected Plot** dialog.

M20.4.5 WINDOW

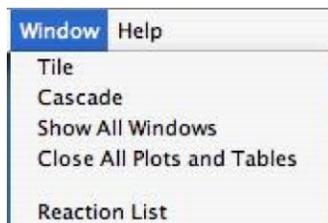


Figure M20.4.13. Window menu.

The **Window** menu contains four items as shown in Figure M20.4.13.

Tile will arrange all of the open plots and tables in a grid layout.

Cascade will stack all of the open plots and tables diagonally.

Show All Windows bring all of the open windows to the front.

Close All Plots and Tables will close all of the open plots and tables.

Below these items will be a list of the open plots, tables, and windows, including the reaction list. Clicking on an item in this list will make the item active and bring it to the front.

M20.4.6 HELP

The **Help** menu contains three items as shown in Figure M20.4.14.



Figure M20.4.14. Help menu.

The **Help** item activates the online help.

The **Javapeño Website** item opens the Javapeño website. In Windows and Mac environments the website is opened in the default browser. In a Linux environment, Javapeño tries to open the website with Mozilla. In all other environments, Javapeño tries to open the website with Netscape.

The **About** item activates an information dialog (including the version number) regarding Javapeño.

M20.5 PLOTS

The generation of plots from existing data files is described in this section. For all data types, begin by selecting the desired data file through the **Open Dataset...** item in the **File** menu. When the dataset is opened, a list of data available for plotting will appear in the **Reaction List**. Double-click on an item to plot it in its default format. To add data to an existing plot, select the desired plot window, then double-click an item in the list. To plot the data in a new plot window when other plots are already present hold down the **Ctrl** key on the keyboard while double-clicking an item in the list or right-click on the selected item and select **Plot in New Window** from the pop-up window. To create 2D plots with options other than the default options for a particular plot type, use the New Plot item from the **File** menu to create a blank plot, configure the plot with the **Set Plot Format** dialog box, then double-click an item in the list to add it to the new plot.

M20.5.1 TSUNAMI SENSITIVITY DATA

TSUNAMI Sensitivity data is typically contained in data files with the extension *.sdf*. Javapeño supports the TSUNAMI-A format generated by TSUNAMI-1D and the TSUNAMI-B format generated by TSUNAMI-3D. Javapeño automatically identifies the type of file according to its contents. The default settings for TSUNAMI data are logarithmic x-axis, linear y-axis and unit lethargy enabled.

Once the data file is open, the list of sensitivity profiles is presented according to the nuclide-reaction pairs and mixture or region that the data represent. The first data, identified only by their nuclide-reaction pairs, are the energy- and region-integrated sensitivity coefficients. These data are integrated over all regions of the system for all mixtures that contain the nuclide. The next series of data, identified by the nuclide-reaction pairs and the mixture numbers, are the mixture-integrated sensitivity coefficients. These data are integrated over all regions of the problem that contain the same mixture. If *pvtgeom* was entered in the SAMS input, then data for each XSDRNPM zone of the TSUNAMI-1D data or each KENO V.a unit and region of the TSUNAMI-3D data are listed for each nuclide-reaction pair.

In the legend, the **Dataset Title** as set by the Dataset Options dialog is shown, followed by the **Legend Text** that is set in the **Profile Information** dialog box. The energy-integrated value for the profile (i.e., sum over groups) is displayed. If the profile contains both positive and negative values, the sum of the group-wise values that are positive and the sum of the group-wise values that are negative can be displayed in the legend. Also, for region-dependent data, the region volume and the unit comment can be displayed.

Right-clicking on an item in **Reaction List** and selecting **Get Profile Information** in the pop-up menu displays a dialog with some information about that profile.

M20.5.2 KENO V.A AND KENO-VI DATA

Flux and reaction rate data from KENO V.a and KENO-VI can be generated with KMART and KMART6, respectively. The data file used by Javapeño is generated with the KENO3D option in KMART. The format of the data files generated by KMART and KMART6 is identical and will just be referred to as KMART. KMART files typically have the extension *.kmt*. To begin plotting KMART data, select a data file using **Open Dataset...** from the **File** menu. A list of profiles available for plotting will appear on the right hand side of the screen.

The list of available profiles begins with activities requested from KMART for each region of each unit where the requested nuclide is present in the KENO model. These profiles are listed according to the nuclide ID number (nuc. ID) and the reaction MT number (Reac. ID). Some commonly used MT numbers are shown in Table M20.5.1.

Table M20.5.1. Commonly used reactions

MT Number	Reaction
1	Total
2	Elastic Scattering
4	Inelastic Scattering
16	(n,2n)
27	Absorption
101	Capture (non-fission absorption)
102	n,gamma
103	n,p
104	n,d
105	n,t
106	n,he-3
107	n,alpha
452	nubar
1018	chi

The flux is identified as Nuc. ID 99 and Reac. ID 1099, which are listed as the last profiles in the list. A final profile is given for the region-integrated flux identified as Unit 0 and Reg. 0. This final profile is the flux summed over all regions in the model.

The **Integral Value** identified in the legend text is the sum over groups for the particular profile. For the region-integrated flux, the integral value is not available on the data file and is listed as 0.0 in Javapeño.

M20.5.3 XSDRNPM DATA

Data from XSDRNPM are written on one to three data files. These files are the input dump file (.idf), the balance table file (.btf) and the activities file (.acf). The .idf file contains the problem definition; the .btf file contains fluxes, currents and sources; and the .acf file contains user-requested activities.

To view the data contained in these files, begin by opening the .idf file with **Open Dataset...** from the **File** menu. Javapeño expects the .btf and .acf files to be present in the same directory with the same root name as the .idf file. For example, if the .idf file is called mydata.idf, Javapeño expects the .btf file to be mydata.btf and the .acf file to be mydata.acf. If Javapeño cannot find these files, a dialog box will appear where the user can locate them manually. If one file cannot be located, its data will not be available for plotting. If neither the .btf nor the .acf file can be located, no data will be available for plotting.

When both the .btf and .acf files are available, the data from the .acf file appears first in the list of profiles available for plotting. Activities by interval for each nuclide-reaction pair requested from XSDRNPM are listed first. These data represent the activity per unit volume for each interval of the computational mesh.

The next series of data are the activities by zone. These data represent the activity per unit volume of each material zone defined in the system model. If one of these datasets is used to create a new plot (when no plots are open, when the **Ctrl**+double-click is used, or when **Plot in New Window** is selected in the pop-up menu), the default settings for the plot are linear x- and y-axes and no lethargy.

The next series of data in the list of profiles available for plotting are from the .btf file. The profiles that can be included in the .btf file are fixed source, fission source, absorption rate, total leakage, fission rate, flux, $\langle n, 2n \rangle$ rate, buckling loss, right current and left current. These profiles are identified for each material zone in the system model. Often many of these profiles only contain zero data, and a warning message will appear if the user tries to plot a zero profile. For example, the fission rate in a zone without fissile material is zero. If one of these datasets is used to create a new plot (when no plots are open, when the **Ctrl**+double-click is used, or when **Plot in New Window** is selected in the pop-up menu), the default settings for the plot are logarithmic x- and y-axes and use lethargy.

M20.5.4 SMORES DATA

SMORES data are output in two files. The .plotd file contains densities, masses and k-eff by iteration. The .plote file contains effectiveness functions. To open either file, select the file with **Open Dataset...** from the **File** menu. When opening a .plotd file, the reaction list contains densities as a function of position of each iteration followed by a summary of **Mass by Iteration** and **K-eff by Iteration**. When opening a .plote file, the reaction list contains effectiveness functions for each iteration.

If a SMORES dataset is used to create a new plot (when no plots are open, when the **Ctrl**+double-click is used, or when **Plot in New Window** is selected in the pop-up window), the default settings for the plot are linear x- and y-axes and no lethargy.

M20.5.5 ICSBEP SENSITIVITY DATA

Several sets of sensitivity data are distributed with the International Handbook of Evaluated Criticality Safety Benchmark Evaluations DVD. In the 2005 DVD (the latest version tested with Javapeño), these data are available on the DVD in the directory Dice/data/sensitivity/HEU and Dice/data/sensitivity/PU. In the **Open Dataset...** dialog, choose the **File Format of All Files**. Because the format of these data files do not allow for a title, the **File Title** is always set to ICSBEP. The use of the **Use Filenames** items in the **Options** menu is recommended to obtain a more descriptive title. Some profiles listed on these data files (such as H FISSION) contain only zeros. Although these data are listed by Javapeño, zero data cannot be plotted, and a warning message will appear.

The energy structure of the ICSBEP data is contained in a separate data file that is called “evergies” and is in the Dice/data/sensitivity directory on the 2005 DVD. Javapeño relies on this file existing one level above the directory containing the sensitivity data (e.g., HEU). If this file is moved or renamed, ICSBEP data cannot be processed. Javapeño assumes that only 30 energy groups are present for ICSBEP sensitivity data.

Right-clicking on an item in the list of data available for plotting and selecting **Profile Information** displays a dialog with some information about that profile.

If an ICSBEP dataset is used to create a new plot (when no plots are open, when the **Ctrl**+double-click is used, or when selecting **Plot in New Window** in the pop-up menu), the default settings for the plot are logarithmic x-axis, linear y-axis, and unit lethargy is enabled.

M20.5.6 CROSS-SECTION-COVARIANCE DATA

Javapeño supports plotting multigroup cross-section-covariance data in the COVERX binary format. By default there is no extension on the cross-section-covariance data files. The 44groupcov cross-section-covariance data file present in the scale6.0/data directory and is documented in Sect. M19 of the SCALE manual. To open the file, select the file with **Open Dataset...** from the **File** menu. A list of reactions will be displayed with each reaction formatted as “*NUCLIDE_SYMBOL_1-MT_NAME_1 to NUCLIDE_SYMBOL_2-MT_NAME_2*”.

A plot of the energy-group to energy-group cross-section covariance data is created by double-clicking on an entry in the **Reaction List**. When a new plot is created, the covariance matrix will appear as a 3D plot, and the standard deviation will appear below the 3D plot as a 2D plot. Right-clicking on an item in the **Reaction List** provides a pop-up menu with many options including plotting the standard deviation without the covariance matrix as a function of energy or energy group.

M20.5.7 CROSS-SECTION DATA

Javapeño can plot cross-section data from AMPX master or working binary data libraries. By default there is no extension on the AMPX libraries. Javapeño can, in most cases, detect whether the library is in the master or working format. If Javapeño cannot determine the type of library, a prompt will be displayed asking how the file should be treated. To open the file, select the file with **Open Dataset...** from the **File** menu. A **Reaction List** will be displayed in tree format. The reactions are formatted as “*MIXTURE NUCLIDE_SYMBOL MT_NAME TEMPERATURE_IN_KELVIN LEGENDRE_ORDER*.” If certain information, such as temperature, is not available, then it is not included in the reaction label. The grouping of the tree is explained in Sect. M20.9.1.

Double-clicking on an item within the tree will either open the next level down in the tree, or at the lowest level, will plot the data. Reaction cross sections are visualized as 2D plots and transfer arrays are visualized as 3D plots. Right-clicking on items in the **Reaction List** will provide a pop-up menu with more options.

M20.5.8 GENERAL 2D PLOT DATA

Javapeño will open and render 2D plots in a general plot format. The support of a general format is useful for viewing 2D data from other sources. The format is defined by a series of keywords and data values. A 2D plot file contains data for a single plot and may contain multiple datasets. Options for the plot format are entered first followed by options and values for each dataset. Once a plot is loaded, it can be customized using the interactive features of Javapeño.

The options for the plot are given below in Table M20.5.2. Default values are shown in **bold**, where applicable.

Table M20.5.2. Plot options keywords for general 2D datafile

Identifier	Values	Description
marks:	none , points, dots, various	Places a marker on the data point for all datasets.
lines:	on , off	Connects data points with lines for all datasets.
impulses:	on, off	Draws lines from the data point to the x-axis for log plots or to y=0 for linear plots for all datasets.
bars:	off width, offset	If defined with width and offset, a bar chart will be produced. If off, a line plot will be produced.
movelegend:	on, off	Activates automoving legend that tries to move away from data points.
titletext:	title_text	Prints title_text at the top of the plot.
xlabel:	x_axis_label	Prints x_axis_label by the x-axis.
ylabel:	y_axis_label	Prints y_axis_label by the y-axis.
yrange:	y_min, y_max	Minimum and maximum values for y-axis.
xrange:	x_min, x_max	Minimum and maximum values for x-axis.
xticks:	"label1" x1, "label2" x2, etc	Names and values for tick marks for the x-axis. Only necessary when overriding the use of data values on the x-axis.
yticks:	"label1" y1, "label2" y2, etc	Names and values for tick marks for the y-axis. Only necessary when overriding the of data values on the y-axis.
xlog:	on, off	Set x-axis as logarithmic.
ylog:	on, off	Set y-axis as logarithmic.
grid:	on, off	Show x- and y-gridlines.
xgrid:	on, off	Show x-gridlines.
ygrid:	on , off	Show y-gridlines.
moregrid:	on , off	Show more gridlines, if x- or y-gridlines are shown.
color:	on , off	Use color in the graph. If off, graph is black and white.
linewidth:	line_width	Default line width for profiles added to the plot.
dash:	on, off	Draw lines between data points as dashed lines.

A dataset begins with the identifier *dataset:* followed by the text for the legend for this dataset. Options can be set for the current dataset using some of the same identifiers used to set options for the plot. Once the identifier *dataset:* is entered, the options apply only to the current dataset. The available identifiers are listed below in Table M20.5.3.

Table M20.5.3. Dataset keywords for general 2D datafile

Identifier	Values	Description
dataset:	legend_text	Begins a new dataset with legend_text for the legend. Note that ?? in the legend_text will create a line break. Also, if the legend of the current dataset matches the legend of the previous data set by all except the last 8 characters, only the last 8 characters of the current dataset are printed. This is for log y-axis data that are identified with the same legend, except over legend ends in “Positive” and the other ends in “Negative”.
marks:	none, points, dots, various	Places a marker on the data point for this dataset. Overrides values set in the plot options section, which is the default for all datasets.
lines:	on, off	Connects data points with lines for this dataset. Overrides values set in the plot options section, which is the default for all datasets.
impulses:	on, off	Draws lines from the data point to the x-axis for log plots or to y=0 for linear plots for this dataset. Overrides values set in the plot options section, which is the default for all datasets.
linewidth:	line_width	Sets the line width for the current dataset.
datasetcolor:	hex number for HTML color preceded by 0x (e.g., datasetcolor: 0xff0000 sets the color for the current dataset to red) Default 0x000000 (black)	Sets color for this dataset. Color is only used if “color: ov” is entered in the plot options. See Table M18.B.1 for HTML colors.

Once options for the dataset are entered, the data values for the current dataset can be entered using the identifiers given below in Table M20.5.4. If no identifier is given, *draw:* is assumed for data entry.

Table M20.5.4. Data value keywords for general 2D datafile

Identifier	Values	Description
draw:	x, y, y_eb_low, y_eb_high	Defines a point on the plot at location (x,y). y_eb_low and y_eb_high are optional arguments that define the low and high points for an error bar. If “lives” is set to ov, this point will be connected to the previous and next point.
move:	x, y, y_eb_low, y_eb_high	Defines a point on the plot at location (x,y). y_eb_low and y_eb_high are optional arguments that define the low and high points for an error bar. This point will not be connected to the next or previous point unless “lives” is subsequently set to ov.
skip:	x, y, y_eb_low, y_eb_high	Defines a point on the plot at location (x,y). y_eb_low and y_eb_high are optional arguments that define the low and high points for an error bar. This point will never be connected to the next or previous point even if “lives” is set to ov.
hist:	x, y, y_eb_low, y_eb_high, x_min, x_max	Defines a point on the plot at location (x,y). y_eb_low and y_eb_high define the low and high points for an error bar extending from the point (x,y). If y_eb_low and y_eb_high are both zero, the error bar will not be drawn. x_min and x_max define the x-range where this data is valid and a line is drawn from x_min to x_max with a height of y. If “lives” is set to on, this point will be connected to the previous and next point from the points (x_min, y) and (x_max,y)
jump:	x,y	Repositions the plot pointer to (x,y). This is an invisible point that will never have a line or a mark.
change:	x,y	Reposition the plot pointer to (x,y). This point will never have a mark, but will have a line if “lives” is set to on.

Some examples of .plt files are given on the following pages.

M20.5.8.1 Sensitivity Plot

The data file for an example sensitivity plot is shown in Figure M20.5.1.

```
xlog: on
DataSet: h-1 total?? a = 0.220288 +/- 0.01991497?? osc = -0.07603897 +/- 0.01586998
datasetcolor: 0x0000ff
jump: 1.00E-05, -3.73E-04
hist: 5.24E-04, -3.73E-04, -4.96E-04, -2.49E-04, 3.00E-03, 1.00E-05
hist: 4.91E-03, -6.67E-03, -8.75E-03, -4.60E-03, 7.50E-03, 3.00E-03
hist: 8.69E-03, -1.08E-02, -1.75E-02, -4.00E-03, 1.00E-02, 7.50E-03
hist: 1.65E-02, -2.59E-02, -3.32E-02, -1.85E-02, 2.53E-02, 1.00E-02
hist: 2.76E-02, -4.60E-02, -6.95E-02, -2.26E-02, 3.00E-02, 2.53E-02
hist: 3.48E-02, -2.79E-02, -4.93E-02, -6.43E-03, 4.00E-02, 3.00E-02
hist: 4.48E-02, -3.86E-02, -6.41E-02, -1.31E-02, 5.00E-02, 4.00E-02
hist: 5.94E-02, -2.59E-02, -4.69E-02, -4.91E-03, 7.00E-02, 5.00E-02
hist: 8.41E-02, -8.70E-03, -2.60E-02, 8.61E-03, 1.00E-01, 7.00E-02
hist: 1.23E-01, -9.97E-03, -2.16E-02, 1.65E-03, 1.50E-01, 1.00E-01
hist: 1.74E-01, 1.81E-03, -6.76E-03, 1.04E-02, 2.00E-01, 1.50E-01
hist: 2.12E-01, 3.48E-03, -6.03E-03, 1.30E-02, 2.25E-01, 2.00E-01
hist: 2.37E-01, 4.46E-03, -4.77E-03, 1.37E-02, 2.50E-01, 2.25E-01
hist: 2.62E-01, -2.33E-03, -1.15E-02, 6.79E-03, 2.75E-01, 2.50E-01
hist: 2.99E-01, 1.34E-03, -5.56E-03, 8.24E-03, 3.25E-01, 2.75E-01
hist: 3.37E-01, -1.67E-03, -1.11E-02, 7.72E-03, 3.50E-01, 3.25E-01
hist: 3.62E-01, 2.74E-03, -6.71E-03, 1.22E-02, 3.75E-01, 3.50E-01
hist: 3.87E-01, 1.72E-03, -8.11E-03, 1.16E-02, 4.00E-01, 3.75E-01
hist: 5.04E-01, 4.39E-03, 2.26E-04, 8.56E-03, 6.25E-01, 4.00E-01
hist: 7.98E-01, 5.74E-03, 1.65E-03, 9.83E-03, 1.00E+00, 6.25E-01
hist: 1.35E+00, 7.73E-03, 3.94E-03, 1.15E-02, 1.77E+00, 1.00E+00
hist: 2.33E+00, 1.01E-02, 6.21E-03, 1.41E-02, 3.00E+00, 1.77E+00
hist: 3.81E+00, 1.02E-02, 6.13E-03, 1.44E-02, 4.75E+00, 3.00E+00
hist: 5.35E+00, 2.20E-02, 1.71E-02, 2.69E-02, 6.00E+00, 4.75E+00
hist: 7.00E+00, 9.22E-02, 8.89E-02, 9.55E-02, 8.10E+00, 6.00E+00
hist: 9.02E+00, 2.43E-02, 1.92E-02, 2.94E-02, 1.00E+01, 8.10E+00
hist: 1.82E+01, 2.54E-02, 2.30E-02, 2.79E-02, 3.00E+01, 1.00E+01
hist: 5.81E+01, 2.35E-02, 2.09E-02, 2.61E-02, 1.00E+02, 3.00E+01
hist: 2.64E+02, 1.46E-02, 1.24E-02, 1.68E-02, 5.50E+02, 1.00E+02
hist: 1.44E+03, 1.48E-02, 1.24E-02, 1.72E-02, 3.00E+03, 5.50E+02
hist: 8.07E+03, 1.11E-02, 8.59E-03, 1.36E-02, 1.70E+04, 3.00E+03
hist: 2.07E+04, 1.26E-02, 7.15E-03, 1.81E-02, 2.50E+04, 1.70E+04
hist: 5.41E+04, 9.62E-03, 7.07E-03, 1.22E-02, 1.00E+05, 2.50E+04
hist: 2.16E+05, 1.47E-02, 1.21E-02, 1.73E-02, 4.00E+05, 1.00E+05
hist: 6.17E+05, 3.25E-02, 2.88E-02, 3.62E-02, 9.00E+05, 4.00E+05
hist: 1.13E+06, 4.15E-02, 3.74E-02, 4.55E-02, 1.40E+06, 9.00E+05
hist: 1.61E+06, 3.08E-02, 2.71E-02, 3.45E-02, 1.85E+06, 1.40E+06
hist: 2.09E+06, 2.35E-02, 2.04E-02, 2.67E-02, 2.35E+06, 1.85E+06
hist: 2.42E+06, 2.17E-02, 1.69E-02, 2.65E-02, 2.48E+06, 2.35E+06
hist: 2.73E+06, 1.78E-02, 1.53E-02, 2.03E-02, 3.00E+06, 2.48E+06
hist: 3.83E+06, 1.50E-02, 1.38E-02, 1.62E-02, 4.80E+06, 3.00E+06
hist: 5.58E+06, 8.84E-03, 8.18E-03, 9.50E-03, 6.43E+06, 4.80E+06
hist: 7.28E+06, 1.22E-03, 8.54E-04, 1.59E-03, 8.19E+06, 6.43E+06
hist: 1.32E+07, -9.57E-06, -5.77E-05, 3.86E-05, 2.00E+07, 8.19E+06
```

Figure M20.5.1. Sensitivity plot data file.

The plot produced by this plot file is shown in Figure M20.5.2.

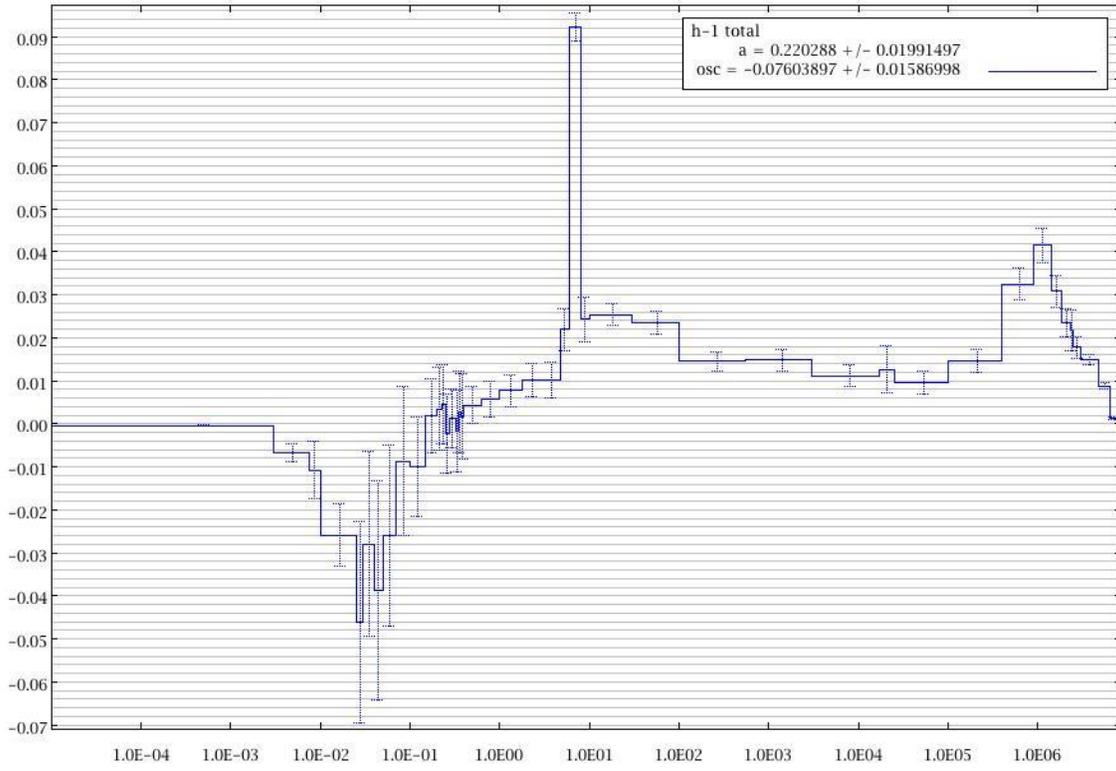


Figure M20.5.2. Sample Javapeño sensitivity plot.

M20.5.8.2 Line Plot

An example line plot generated from KENO V.a k-eff by generation run data is defined by the data file given in Figure M20.5.3.

```
TitleText: K-eff vs. Generation
XLabel: Generation
YLabel: k-eff
xlog: off
ylog: off
marks: off
movelegend: on

dataset: k-eff by generation run
Lines: on
datasetcolor: 0x0000ff

1,1,1,1
2,1,1,1
3,0.995831,0.995831,0.995831
4,0.990162,0.98449303,0.99583097
5,0.982489,0.97414723,0.99083077
6,0.975836,0.96694467,0.98472733
7,0.979603,0.9694688,0.9897372
8,0.98598,0.9678554,1.0041046
9,0.982253,0.9721931,0.9923129
10,0.98449,0.97560403,0.99337597
11,0.988721,0.97965268,0.99778932
12,0.990465,0.9725904,1.0083396
13,0.994231,0.979803,1.008659
14,0.996856,0.979196,1.014516
15,0.99596,0.9825611,1.0093589
16,0.996749,0.9830748,1.0104232
17,0.993585,0.9814489,1.0057211
18,0.990633,0.9774795,1.0037865
19,0.993507,0.9826934,1.0043206
20,0.993016,0.9829382,1.0030938
21,0.995658,0.98614136,1.00517464
22,0.994564,0.98677078,1.00235722
23,0.997075,0.98827843,1.00587157
24,0.997633,0.98935684,1.00590916
25,0.997886,0.98992033,1.00585167
26,0.998038,0.9904315,1.0056445
27,0.998964,0.99159651,1.00633149
28,0.998445,0.99138049,1.00550951
29,0.999152,0.99223025,1.00607375
30,1.00034,0.99339985,1.00728015
31,1.00258,0.99493714,1.01022286
32,1.00219,0.99504347,1.00933653
33,1.00223,0.99533197,1.00912803
34,1.00315,0.99610211,1.01019789
35,1.00357,0.99655947,1.01058053
36,1.00342,0.99666927,1.01017073
37,1.00314,0.99665846,1.00962154
38,1.00288,0.99663197,1.00912803
```

Figure M20.5.3. Line plot data file.

39,1.0023,0.99615942,1.00844058
40,1.00339,0.99759181,1.00918819
41,1.00371,0.99805739,1.00936261
42,1.00344,0.99800295,1.00887705
43,1.00341,0.99811772,1.00870228
44,1.00273,0.99763626,1.00782374
45,1.00273,0.99776521,1.00769479
46,1.00285,0.99802548,1.00767452
47,1.003,0.99828543,1.00771457
48,1.0033,0.99866753,1.00793247
49,1.00334,0.99880951,1.00787049
50,1.00412,0.99955107,1.00868893
51,1.00397,0.99953071,1.00840929
52,1.00456,1.00008076,1.00903924
53,1.00448,1.00010357,1.00885643
54,1.00404,0.99978432,1.00829568
55,1.00397,0.99979005,1.00814995
56,1.00423,1.00016031,1.00829969
57,1.00431,1.00031428,1.00830572
58,1.00439,1.00046234,1.00831766
59,1.00419,1.0003387,1.0080413
60,1.00412,1.00033595,1.00790405
61,1.00452,1.00081389,1.00822611
62,1.00517,1.00140307,1.00893693
63,1.00547,1.00166462,1.00927538
64,1.0057,1.00189018,1.00950982
65,1.00583,1.00206244,1.00959756
66,1.00587,1.00216041,1.00957959
67,1.00633,1.00262795,1.01003205
68,1.00643,1.00277076,1.01008924
69,1.00633,1.00274331,1.00991669
70,1.00649,1.00295542,1.01002458
71,1.00688,1.00331199,1.01044801
72,1.00755,1.00369375,1.01140625
73,1.00738,1.00369252,1.01106748
74,1.00757,1.00390349,1.01123651
75,1.00763,1.00399902,1.01126098
76,1.00754,1.00399221,1.01108779
77,1.00792,1.00424025,1.01159975
78,1.00766,1.00410748,1.01121252
79,1.0075,1.00400113,1.01099887
80,1.00761,1.0041586,1.0110614
81,1.00756,1.00414852,1.01097148
82,1.00792,1.00450475,1.01133525
83,1.00776,1.00439273,1.01112727
84,1.00777,1.00444697,1.01109303
85,1.00748,1.00441631,1.01054369
86,1.00715,1.00384624,1.01045376
87,1.0072,1.00394278,1.01045722
88,1.00759,1.00460994,1.01057006
89,1.00768,1.00471954,1.01064046
90,1.00797,1.00498187,1.01095813
91,1.00768,1.00475035,1.01060965
92,1.00777,1.00487314,1.01066686
93,1.00776,1.00489528,1.01062472
94,1.00787,1.00503251,1.01070749
95,1.00781,1.00500562,1.01061438
96,1.00783,1.00505635,1.01060365
97,1.00803,1.00528245,1.01077755
98,1.00829,1.00553827,1.01104173
99,1.0084,1.00565604,1.01114396
100,1.00808,1.0053899,1.0107701

dataset: Average k-eff
Lines: on
datasetcolor: 0xff0000

1,1
100,1

Figure M20.5.3. Line plot data file (continued).

The plot produced by this data file is shown in Figure M20.5.4.

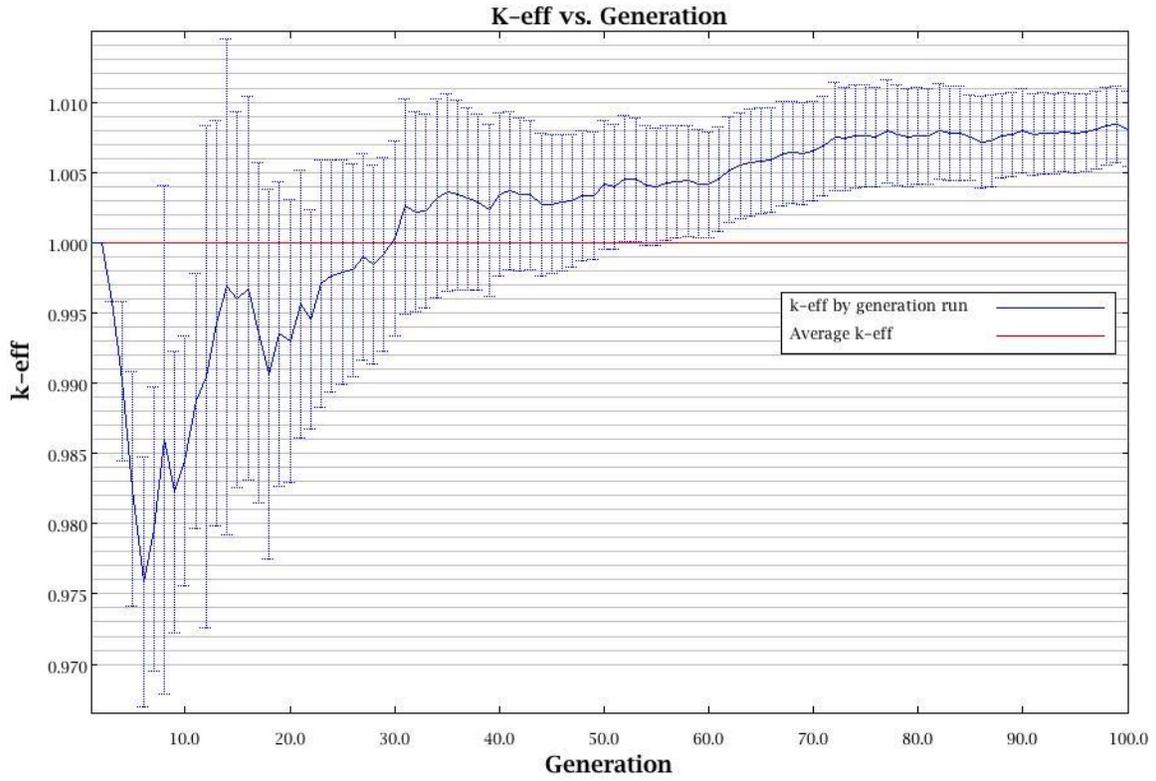


Figure M20.5.4. Sample Javapeño line plot.

M20.5.8.3 Bar Chart

An example bar chart data file generated with KENO V.a data for the frequency of k-eff is defined by the data file given in Figure M20.5.5. Note that the *XTicks*: data actually appear on one line in the file, although it does not display as such here.

```
TitleText: Frequency of k-eff by Generation
XTicks: 0.7129 1, 0.7362 2, 0.7595 3, 0.7828 4, 0.8061 5, 0.8294 6, 0.8527 7, 0.8760 8, 0.8993
9, 0.9227 10, 0.9460 11, 0.9693 12, 0.9926 13, 1.0159 14, 1.0392 15, 1.0625 16, 1.0858 17, 1.1091
18, 1.1324 19, 1.1558 20, 1.1791 21, 1.2024 22, 1.2257 23, 1.2490 24
XLabel: k-eff
YLabel: frequency
Marks: none
Lines: off
Bars: 0.5, 0.1
Moregrid: off

DataSet: Generations 752 to 1000
datasetcolor: 0x0000ff

1, 0
2, 1
3, 0
4, 3
5, 5
6, 4
7, 6
8, 12
9, 14
10, 17
11, 23
12, 28
13, 21
14, 33
15, 21
16, 22
17, 14
18, 8
19, 2
20, 5
21, 1
22, 2
23, 5
24, 2
```

Figure M20.5.5. Bar chart data file.

DataSet: Generations 503 to 1000
datasetcolor: 0xff0000

1,	0
2,	1
3,	0
4,	4
5,	7
6,	13
7,	13
8,	25
9,	31
10,	39
11,	47
12,	50
13,	41
14,	56
15,	37
16,	43
17,	29
18,	21
19,	10
20,	10
21,	7
22,	4
23,	7
24,	2

DataSet: Generations 255 to 1000
datasetcolor: 0x00ff00

1,	0
2,	3
3,	4
4,	6
5,	9
6,	20
7,	25
8,	34
9,	47
10,	67
11,	61
12,	67
13,	63
14,	75
15,	64
16,	60
17,	47
18,	35
19,	18
20,	13
21,	11
22,	7
23,	7
24,	2

Figure M20.5.5. Bar chart data file (continued).

DataSet: Generations 6 to 1000
datasetcolor: 0xffa500

1,	1
2,	3
3,	4
4,	9
5,	9
6,	23
7,	38
8,	45
9,	58
10,	87
11,	80
12,	103
13,	82
14,	91
15,	95
16,	84
17,	58
18,	45
19,	24
20,	17
21,	14
22,	13
23,	8
24,	2

Figure M20.5.5. Bar chart data file (continued).

The plot produced by this file is shown in Figure M20.5.6.

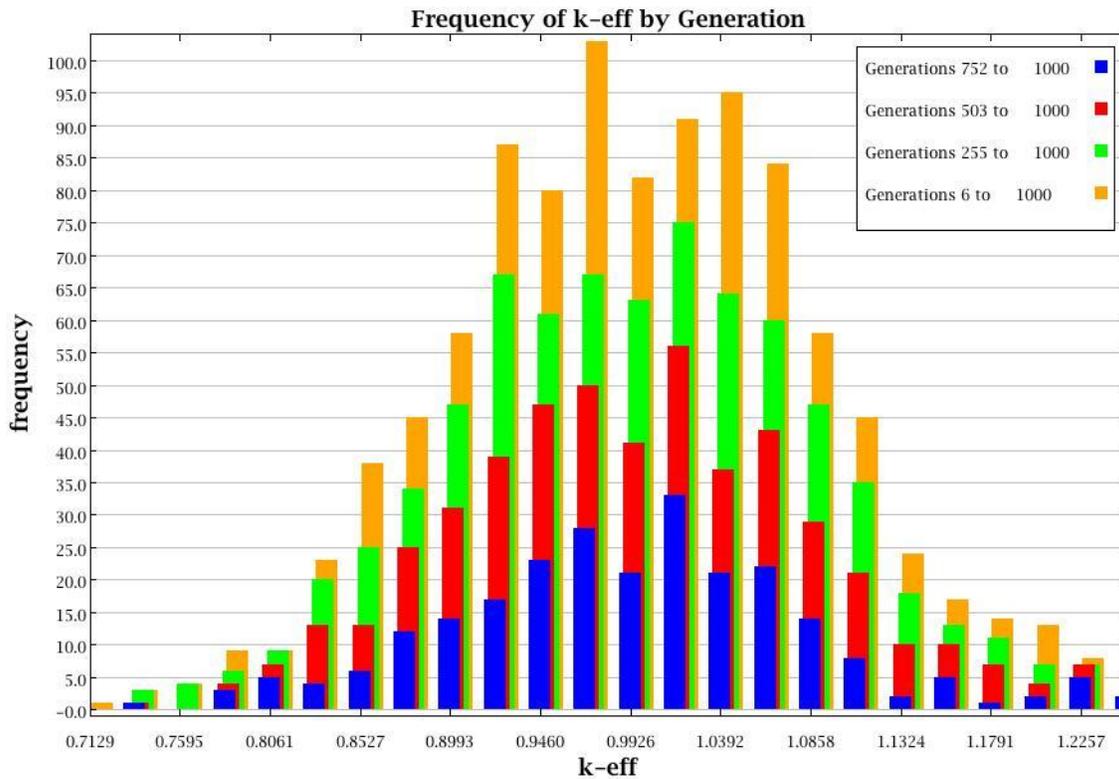


Figure M20.5.6. Sample Javapeño bar chart.

M20.5.9 GENERAL 3D PLOT DATA

Javapeño will open and render 3D plots in a general plot format. The support of a general format is useful for viewing 3D data from other sources. The format is defined by a series of keywords and data values. A 3D plot file contains data for a single plot and may contain multiple datasets. Once a plot is loaded, it can be customized using the interactive features of Javapeño.

The keywords for the General 3D files are shown in Table M20.5.5. All keywords are required.

Table M20.5.5. Keywords for general 3D datafile

Identifier	Values	Description
ft:	file_title	Sets the label that will appear in the reaction list tab. Only one file title is allowed per file.
dt:	data_title	Sets the label that will appear in the reaction list for a single dataset. Each dataset will have a data title.
xl:	x_axis_label	Sets the label for the x axis.
yl:	y_axis_label	Sets the label for the y axis.
zl:	z_axis_label	Sets the label for the z axis.
xx:	maximum x axis value	The maximum value for the x axis.
xn:	minimum x axis value	The minimum value for the x axis.
yx:	maximum y axis value	The maximum value for the y axis.
yn:	minimum y axis value	The minimum value for the y axis.
enddata	n/a	Ends the dataset. NOTE: enddata does NOT have a colon.

The following rules apply to all General 3D datafiles:

1. All tags are required. Each tag, except enddata, must have a value. Use a space if you do not want a label for the file title, dataset title, or axis labels.
2. The file must start with ft:.
3. Each dataset must start with dt:.
4. The first three tags in a dataset must be the axis labels, but they may be listed in any order. Each label can only appear once in a dataset.
5. The next four tags must be the x-axis and y-axis ranges, but they may be listed in any order. Each tag may only occur once per dataset. Both the minimum and maximum values must be greater than 0.
6. Only one data point may be listed on a line. Data points must be entered in the following format: x_bin y_bin z_value. X_bin must be the range [xn,xx]. Y_bin must be in the range [yn,yx].
7. A dataset must end with enddata. NOTE: enddata does NOT have a colon.
8. Repeat rules 3–7 for each dataset in the file.

M20.5.9.1 Example General 3D Datafile and Plot

An example general 3D datafile is shown in Figure M20.5.7. With the first and second datasets shown in Figures M20.5.8–M20.5.9, respectively.

```
ft: Example General 3D file
dt: Dataset 1
xl: X Axis Label
yl: Y Axis Label
zl: Z Axis Label
xn: 1
xx: 3
yn: 5
yx: 15
1 6 -4.055744304810888
1 11 -4.43143902041877
2 11 -5.435204707046975
1 10 7.728216904501456
2 14 4.160148434
1 6 1.2486732396150281
1 5 -2.4786799019574234
2 5 9.678322479503629
enddata
dt: Dataset 2
xl: Another X Axis Label
yl: Another Y Axis Label
zl: Another Z Axis Label
xn: 1
xx: 10
yn: 2
yx: 5
1 2 1.3617897533080401
8 2 8.967110372110565
3 5 -7.326660910564604
10 2 -1.7921810326430053
6 2 -2.105685751801301
7 3 -7.5397161376445
enddata
```

Figure M20.5.7. Example 3D datafile.

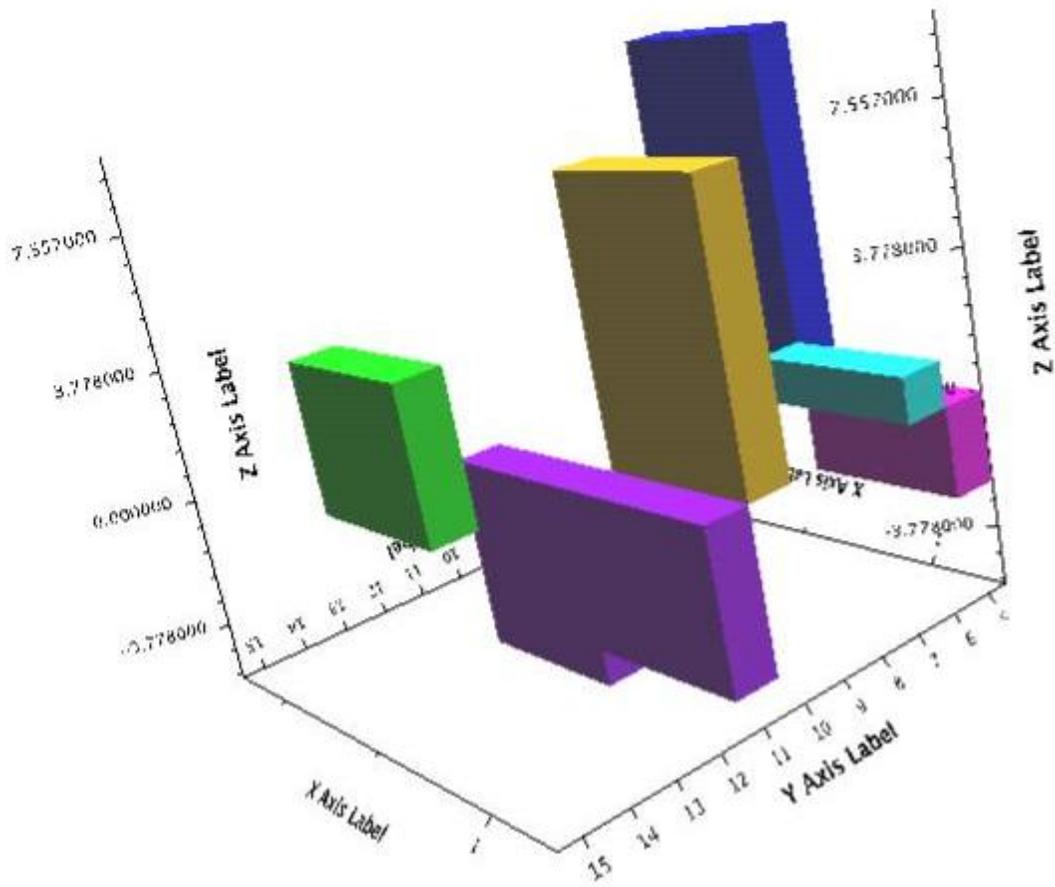


Figure M20.5.8. Dataset 1 from example 3D datafile.

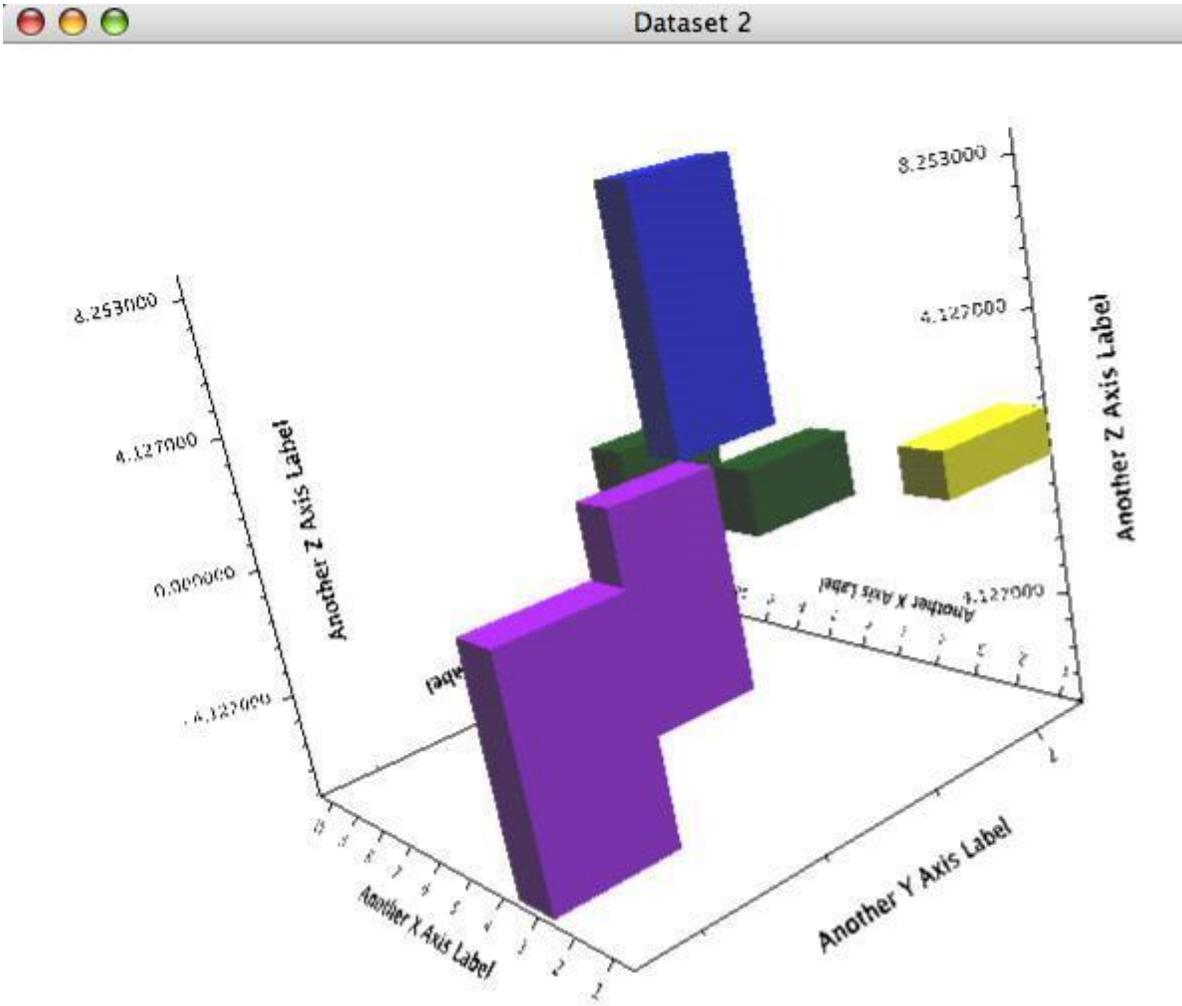


Figure M20.5.9. Dataset 2 from example 3D datafile.

M20.6 CUSTOMIZED PLOTS

Features for customizing plots are described in this section. A plot can be resized by resizing the window that contains it.

M20.6.1 SET PLOT FORMAT

The **Set Plot Format** dialog box is available for both 2D and 3D plots using four panels that set several options for the selected plot. The 2D dialog box can be activated by double-clicking on a 2D plot, outside of the legend. Both versions can be activated by selecting **Format Plot...** from the **Format** menu. Also, specific panels can be accessed with the pop-up menu accessible by right-clicking on a 2D plot or shift+right-clicking on a 3D plot.

M20.6.2 AXES (2D)

The **Axes** panel, shown in Figure M20.6.1, allows the current 2D plot axes to be formatted. The x- and y-axes can be set as logarithmic (otherwise they are linear) and the division by unit lethargy can be selected. X- and y-axis grid lines can be turned on if selected. *More Gridlines* displays minor marks.



Figure M20.6.1. Plot axes formatting dialog for 2D plots.

M20.6.3 PLOT OPTIONS (2D)

The **Plot Options** panel, shown in Figure M20.6.2, is used to set several display options for the selected 2D plot. Options with text fields are updated after the user presses **Enter**. All other options are updated immediately.

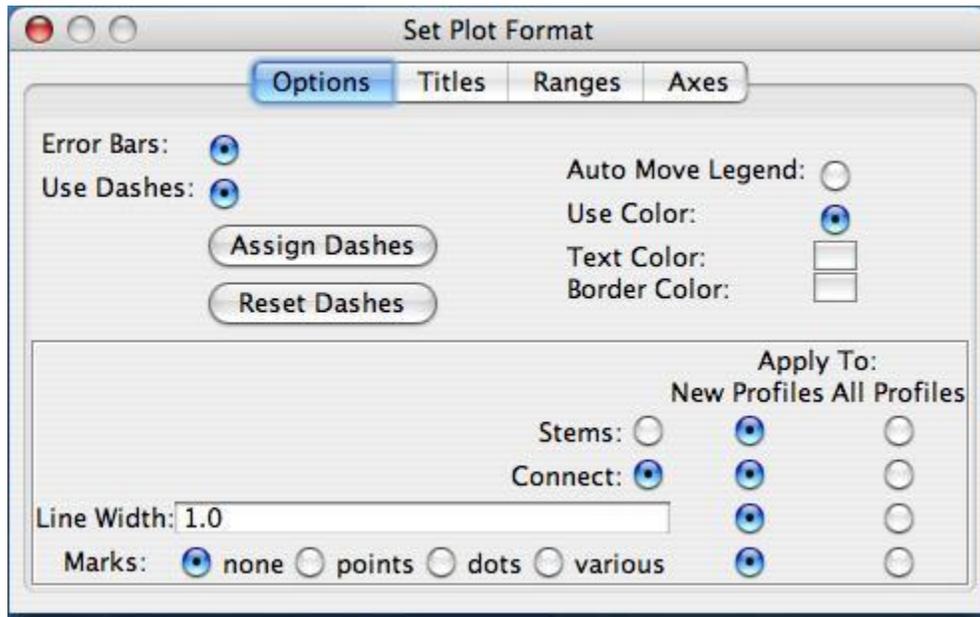


Figure M20.6.2. Plot options formatting for 2D plots.

Stems: Draw lines from the data point to the x-axis for a logarithmic y-axis or to $y=0$ for a linear y-axis.

Line Width: Used to set the width for lines on the plot. Press **Enter** or **Return** to update the plot after changing the line width.

Errors Bars: Hide/show error bars, if available.

Marks: Add marks of selected style to data points in plot.

Auto Move Legend: Legend placement will automatically vary to avoid interfering with the displayed data.

Connect: Data points are connected with lines.

Assign Dashes: Assign dash values to all profiles in the plots according to their index in the plot. If there are more than 11 profiles in the plot then the pattern sequence will restart.

Reset Dashes: Sets all profiles to their initial dash state, which is a solid line.

Use Dashes: Lines are drawn with dashed patterns. Dash patterns for data can be customized in the **Profile Information** dialog accessible by double-clicking or right-clicking in the legend.

Text Color: Allows the user to change the color of text in the plot. Colors for data can be customized in the **Profile Information** dialog accessible by double-clicking in the legend.

Border Color: Allows the user to change the color of the border around a plot.

M20.6.4 PLOT OPTIONS (3D)

The **Plot Options** panel, shown in Figure M20.6.3, accessible from the **Format** menu “**Format Plot...**” item or by shift+right-clicking on the plot and selecting **Format Plot** from the pop-up menu, is used to set several display options for the selected 3D plot. Options with text fields are updated after the user presses **Enter**. All other options are updated immediately.

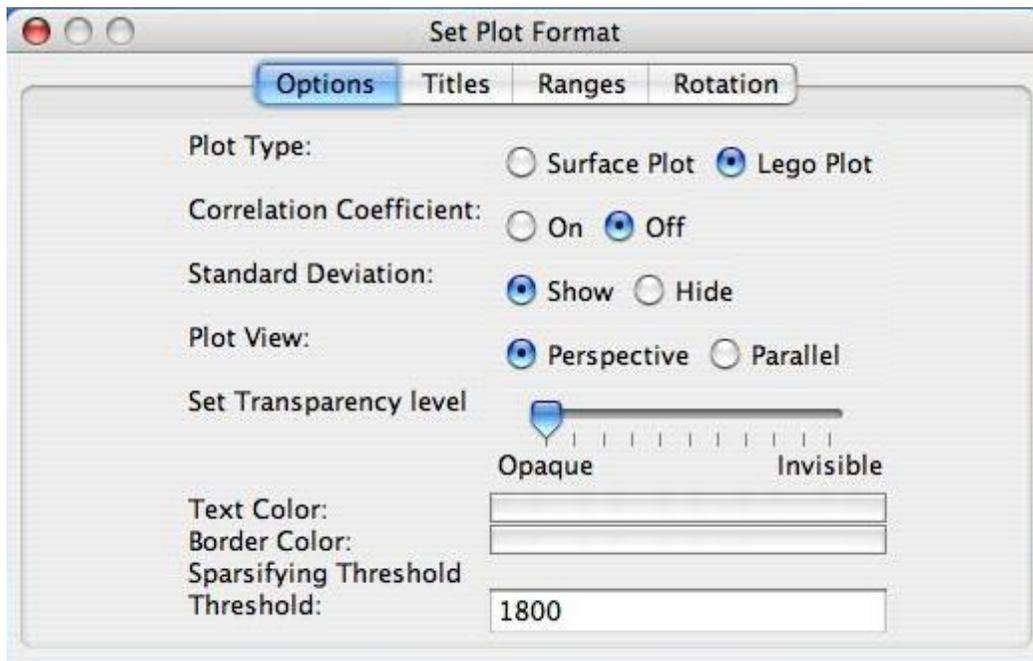


Figure M20.6.3. Plot options formatting for 3D plots.

Plot Type: Select whether to display the 3D plot in either **Lego** (block) or **Surface** (contour) format. **Lego Plot** is the default type.

Correlation Coefficient (COVERX only): Display the **Correlation Coefficient** of the current plot. The correlation coefficient will be displayed in the current **Plot Type** format. This is turned off by default.

Standard Deviation (COVERX only): Display the **Standard Deviation** of the plot. The standard deviation is displayed in a 2D plot that is attached to the 3D plot. If *Correlation Coefficient* is selected, the standard deviation is computed from the covariance data and not from the correlation coefficient data. The standard deviation is displayed by default.

Normalized Probability (AMPX P_0 only): Display the normalized probability of the current plot. It will be displayed in the current **Plot Type**. This is turned off by default.

Avg. Cosine of Scattering Angle (AMPX P_1 only): Display the average cosine of the scattering angle for the current plot. It will be displayed in the current **Plot Type**. This is turned off by default.

Plot View: Select the projection policy for the current plot. The default projection policy is perspective.

Set Transparency Level: Sets the transparency level for the current plot. Pulling the slider to the right increases the transparency of the plotted data (**Surface** or **Lego**).

Text Color: Allows the user to change the color of text in the plot.

Border Color: Allows the user to change the color for the border of the plot.

M20.6.5 PLOT TITLES (2D)

The **Plot Titles** panel, shown in Figure M20.6.4, allows for customized titles in the selected 2D plot window. The fonts used for these titles can be set in the Fonts for Selected Plot dialog. Pressing **Enter** or **Return** on the keyboard after entering text in one of the fields will cause the plot to update with the modified text.

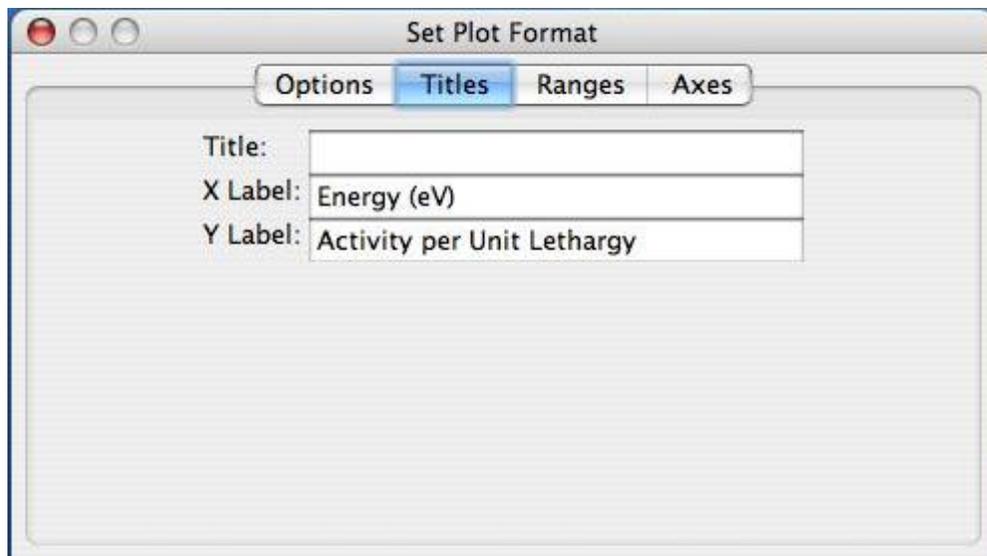


Figure M20.6.4. Plot titles formatting for 2D plots.

Title: Title displayed at the top of the plot.

X Label: Label for x-axis.

Y Label: Label for y-axis.

M20.6.6 PLOT TITLES (3D)

The **Plot Titles** panel, shown in Figure M20.6.5, allows for customized titles in the selected 3D plot window. Pressing **Enter** or **Return** on the keyboard after entering text in one of the fields will cause the plot to update with the modified text.

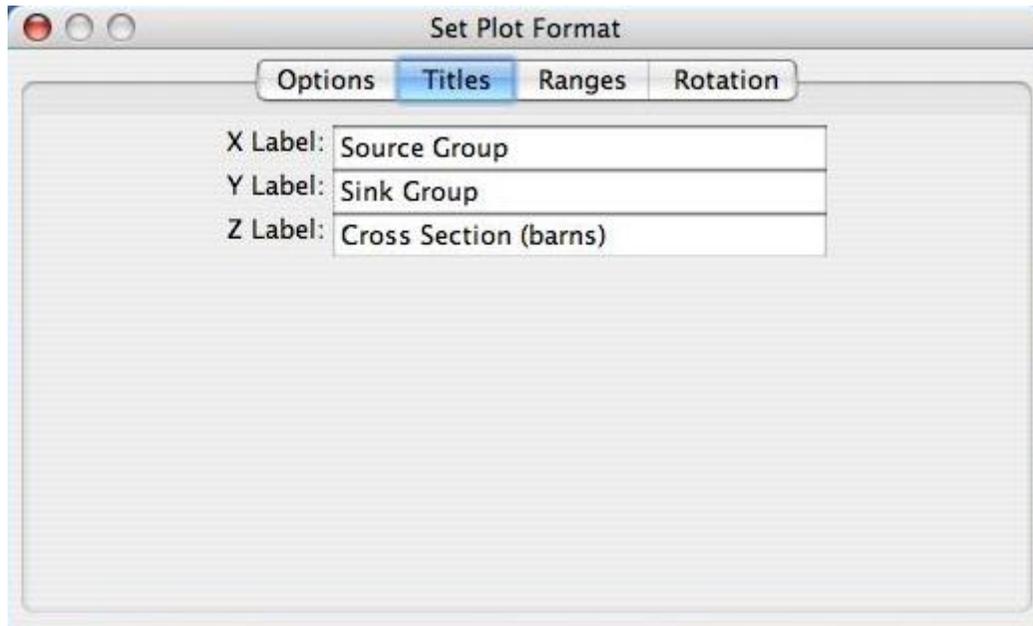


Figure M20.6.5. Plot titles formatting for 3D plots.

X Label: Label for x-axis.

Y Label: Label for y-axis.

Z Label: Label for z-axis.

M20.6.7 PLOT RANGES (2D)

The ranges of displayed data can be set for the x- and y-axes. Pressing **Enter** or **Return** on the keyboard after modifying the data in any of the fields will cause the plot to update with the modified values.

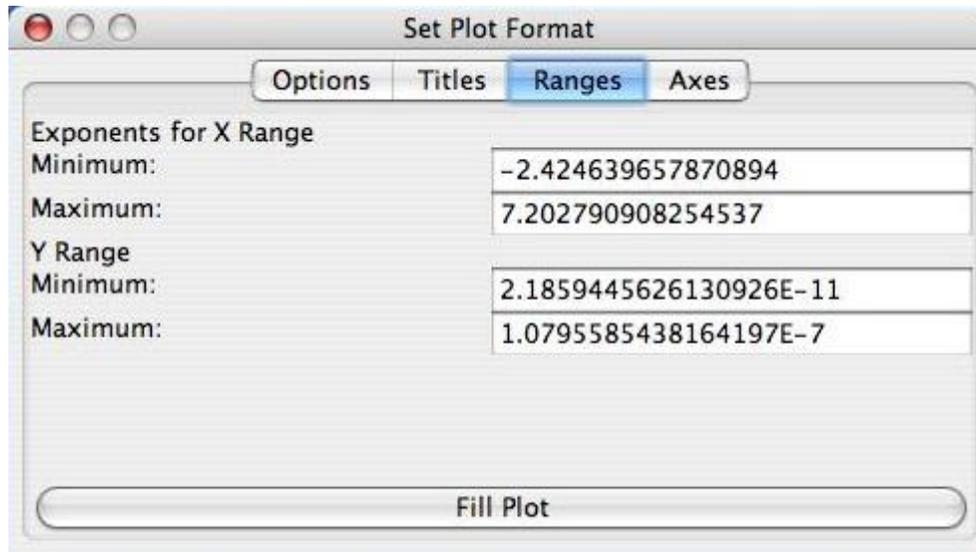


Figure M20.6.6. Plot ranges formatting for 2D plots.

In the above dialog, the x-axis is logarithmic and the y-axis is linear. In the case of a logarithmic axis, the values entered are the exponents for the base 10 value, i.e. x in 10^x , corresponding to the minimum and maximum values for the range of the particular axis. For a linear axis, the values entered are the actual values for the minimum and maximum of the range. The ranges of the displayed data can also be set by zooming. Pressing **Fill Plot** resets the axes to the actual [Minimum, Maximum] ranges.

M20.6.8 PLOT RANGES (3D)

The ranges of displayed data can be set for the x-, y-, and z- axes with the *Ranges* dialog shown in Figure M20.6.7. The plot scale can also be set. The scale value is a straight multiplier for the plot data and is an inverse multiplier for the plot text. Pressing **Enter** or **Return** on the keyboard after modifying the data in any of the fields will cause the plot to update with the modified values. Pressing **Fill Plot** resets the axes to the actual [Minimum, Maximum] ranges.

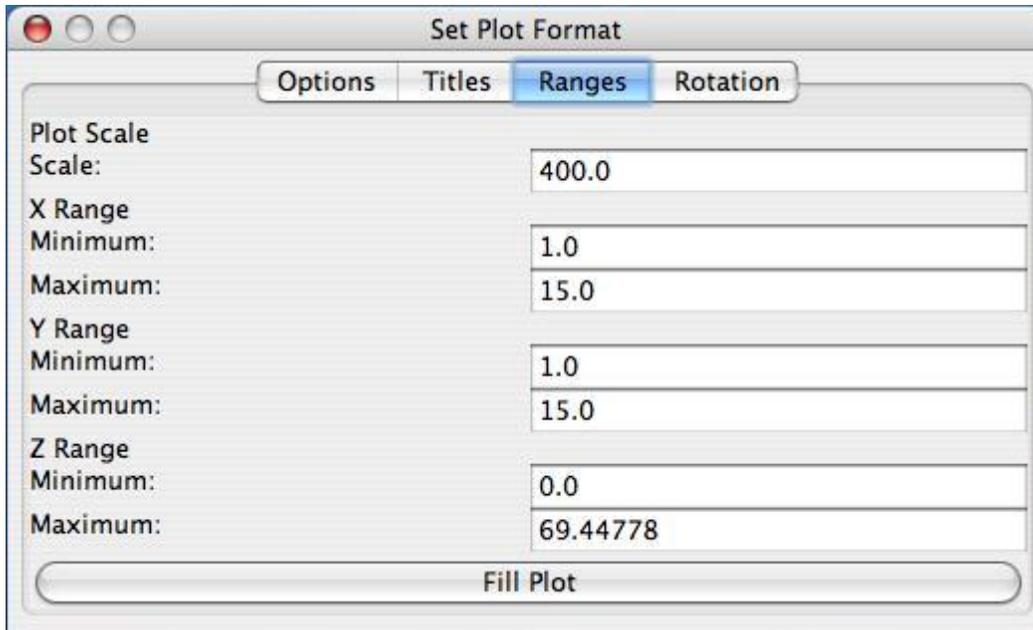


Figure M20.6.7. Plot ranges formatting for 3D plots.

M20.6.9 PLOT ROTATION (3D ONLY)

The *Rotation* panel, shown in Figure M20.6.8, allows for customized rotation of a 3D plot. Pressing **Enter** or **Return** on the keyboard after entering text in one of the fields will cause the plot to update with the modified text.

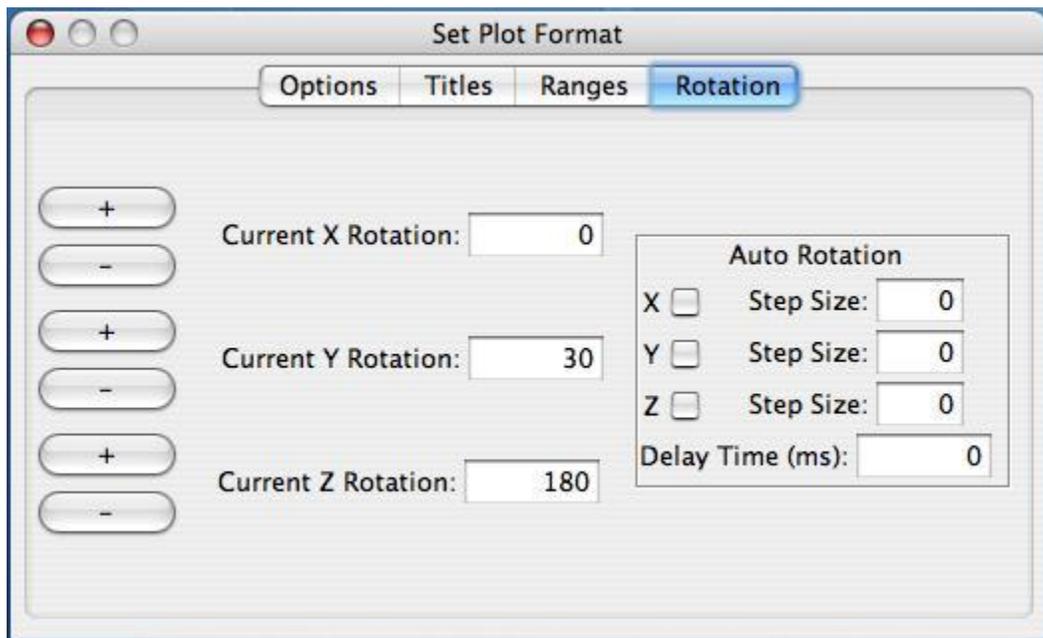


Figure M20.6.8. Plot rotation formatting for 3D plots.

The rotation for an axis can be set by explicitly setting a value in the text field or by clicking the appropriate button.

Current X Rotation: Current rotation of the plot on the x-axis in degrees. Entering a value into this text field, and pressing **Enter**, will set the x-axis rotation of the plot.

Current Y Rotation: Current rotation of the plot on the y-axis in degrees. Entering a value into this text field, and pressing **Enter**, will set the y-axis rotation of the plot.

Current Z Rotation: Current rotation of the plot on the z-axis in degrees. Entering a value into this text field, and pressing **Enter**, will set the z-axis rotation of the plot.

X: Include the x-axis in the auto-rotation step.

Y: Include the y-axis in the auto-rotation step.

Z: Include the z-axis in the auto-rotation step.

Step Size: Set the step size (in degrees) for an axis.

Delay Time: The delay time (in milliseconds) between auto-rotate steps.

M20.6.10 SET LEGEND FORMAT (2D ONLY)

The content of the legend can be modified with the **Set Legend Format** dialog, shown in Figure M20.6.9. This dialog is activated for the current 2D plot by selecting **Format Legend...** item from the **Format** menu, by pressing the **Format Legend** button on the **Profile Information** dialog, or by choosing **Edit Legend Contents** in the legend pop-up menu.



Figure M20.6.9. Legend formatting dialog for 2D plots.

Show Legend: Show/Hide the legend.

Dataset Title: Legend text will include the title for the dataset where the data originated as it was last set in the **Dataset Options** dialog.

Integral Values: Legend text will include the sum of the y-values for all x-values, if available.

Region Volume Data: Legend text will include the volume of the region or zone where the data was computed, if available.

Unit Comment: Legend text will include comments from the data file for the particular data type, if available.

M20.6.11 LEGEND PLACEMENT (2D ONLY)

The location of the legend can be changed by clicking on it and dragging it to a new location, then releasing the mouse.

M20.6.12 FONTS FOR SELECTED PLOT (2D)

The **Fonts for Selected Plot** dialog, shown in Figure M20.6.10, accesses available system fonts to allow the customization of the selected 2D plot. This dialog box is accessed by selecting **Fonts...** from the **Format** menu or by pressing the **Fonts** button in the **Profile Information** dialog. The plot is updated as changes are made in this dialog.



Figure M20.6.10. Font formatting dialog for 2D plots.

Title Font: Font for plot title.

Label Font: Font for x- and y-axis labels.

Legend Font: Font to use in the legend.

Tick Font: Font to use for x and y-axis tick-mark labels.

M20.6.13 FONTS FOR SELECTED PLOT (3D)

The **Fonts for Selected Plot** dialog, shown in Figure M20.6.11, accesses available system fonts to allow the customization of the selected 3D plot. This dialog box is accessed by selecting **Fonts...** from the **Format** menu.



Figure M20.6.11. Font formatting dialog for 3D plots.

Label Font: Font for x-, y -, and z-axis labels.

Tick Font: Font to use for x-, y-, and z-axis tick-mark labels.

M20.6.14 DATASET OPTIONS

The **Dataset Options** dialog, shown in Figure M20.6.12, allows for changes to a particular dataset loaded using the **Open Dataset...** item of the **File** menu. Changes to the dataset title are updated in all open plots that contain data from this file and have **Dataset Title** selected in the **Set Legend Format** dialog. The **Dataset Options** dialog is accessed by double-clicking on the tab representing the dataset. Pressing any of the buttons causes the selected action to occur. On some systems, these buttons are reversed in order from those shown below. This dialog box is modal when in applet mode. It is modeless in application mode and will update when changing plots.



Figure M20.6.12. Dataset options dialog.

Dataset Title: A customized title can be entered.

Use File Name: Use the name of the data file as the title.

Use File Title: Use the title on the data file as the title.

Refresh Datafile: Reloads the data file and refreshes the reaction list.

Remove Datafile: Remove the dataset from the tab and close its associated data file. Any plots containing data from this data file are left unchanged.

M20.6.15 PROFILE INFORMATION (2D ONLY)

Options for a particular data curve or “profile” are set with the **Profile Information** dialog, shown in Figures M20.6.13–M20.6.14. This dialog can only be accessed by double-clicking or right-clicking in the portion of the legend where the particular profile is identified. Changes are reflected in the 2D plot as they are made.

If a logarithmic y-axis is used, the absolute values of the data are plotted and the values are identified as either positive or negative. Where both positive and negative values are present in the same profile, the colors and styles of the positive and negative values can be separately set, as shown in Figure M20.6.13.

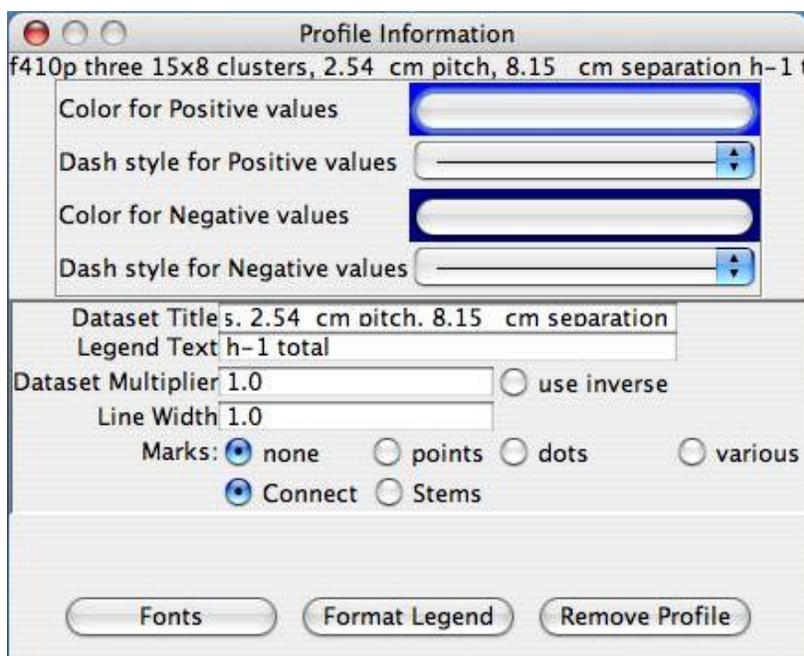


Figure M20.6.13. Profile information dialog for 2D plots with positive and negative values on a logarithmic y-axis.

If a linear y-axis is used, the values themselves are displayed, whether positive or negative. Only a single format is used for a profile, as shown in Figure M20.6.14.

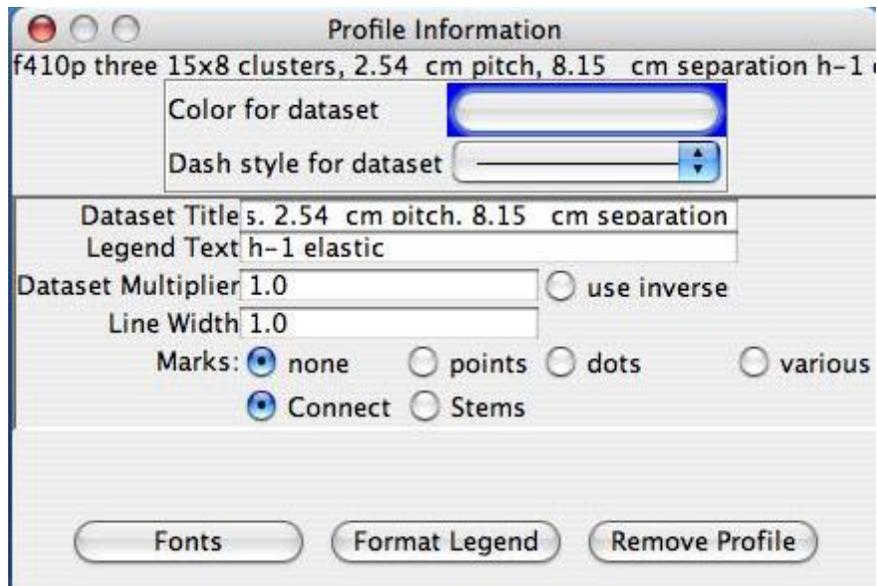


Figure M20.6.14. Profile information dialog for 2D plots.

Color for...: Set color for the particular data identified. Colors are shown in the plot if *Use Colors* is selected in the **Set Plot Format** dialog.

Dash style for ...: Set the dash style for the particular data identified. Dashes are shown in the plot if *Use Dashes* is selected in the **Set Plot Format** dialog.

Legend Text: This is a portion of the legend text specific to this profile. This does not include text that is set with the **Set Legend Format** dialog.

Dataset Multiplier: The data for the profile is uniformly multiplied by the value entered, or divided by the value entered if use inverse is selected.

Fonts: Activates the **Fonts for Selected Plot** dialog.

Format Legend: Activates the **Set Legend Format** dialog.

Remove Profile: Removes the profile from the plot.

M20.6.16 ZOOMING (2D)

To zoom in on an area of a plot, click on the upper left corner of the desired area and drag to the bottom right corner, then release the mouse button. The view is reset to the selected area. To zoom out, click on the plot, then drag up and to the left, then release the mouse button. To return to the default view for the plot, right-click on the plot and select **Fill Plot** from the pop-up menu.

M20.6.17 ZOOMING (3D)

Zooming in 3D plots is handled through the middle mouse button (on three-button mice). On two- and one-button mice, zooming is performed with the **Alt** key and the left mouse button. Zooming is performed by pressing and holding the appropriate button(s) and moving the mouse. Moving the mouse down will zoom in. Moving the mouse up will zoom out.

M20.6.18 PANNING (3D ONLY)

Panning in 3D plots is handled through the right mouse button (on two- and three-button mice). On one-button mice, panning is performed with the **Ctrl** key and the left mouse button. Panning is performed by pressing and holding the appropriate button(s) and moving the mouse. The plot will pan in the direction the mouse is moved.

M20.6.19 ROTATING (3D ONLY)

Rotating in 3D plots is handled through the left mouse button. Rotating is performed by pressing and holding the left mouse button and moving the mouse. The plot will be rotated in the direction the mouse is moved.

M20.6.20 PLOT OPERATIONS (2D ONLY)

Simple mathematical operations can be performed on 2D plots. To perform an operation, first right-click on the 2D plot and choose **Perform Operations** from the pop-up menu or right-click on an item in the reaction list and select **Perform Operations**. This will display the **Javapeno Calculator** dialog, as shown in Figure M20.6.15.

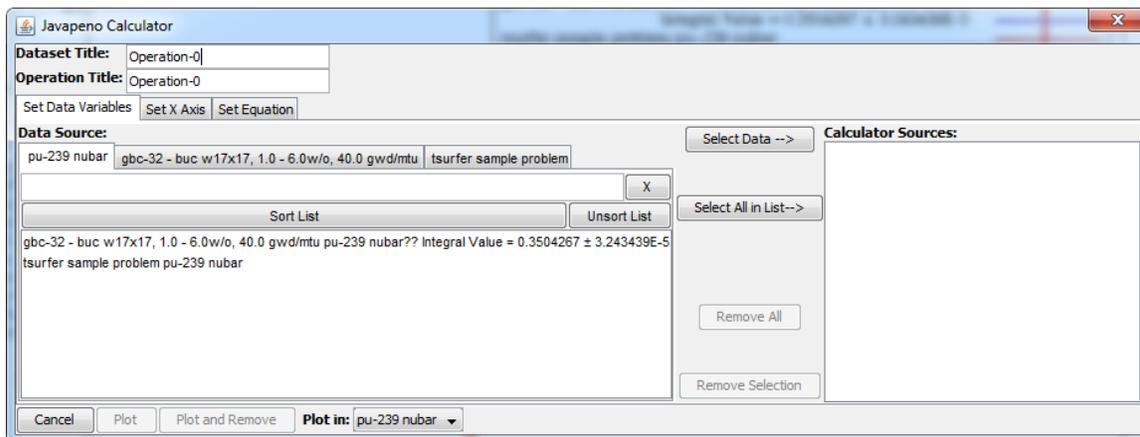


Figure M20.6.15. Javapeno calculator.

This dialog will display profiles available in the currently selected plot as well as all data available from plotting in all open data files. Initial setup of the Javapeno calculator is shown in Figure M20.6.16. The **Dataset Title** and **Operation Title** can be edited for the current operation. This information will be displayed in the plot legend. Next, select the profile that will be included in the mathematical operation and click **Select Data** to add them to the **Calculator Sources** field.
DataSet Title: Assigns a parent data set name for use in the legend.

Operation Title: This sets the profile and legend title for the operation.

Data Source: Open plots or data files that contain information that could be included in a mathematical operation.

Calculator Sources: Information selected by the user to be included in mathematical operations.

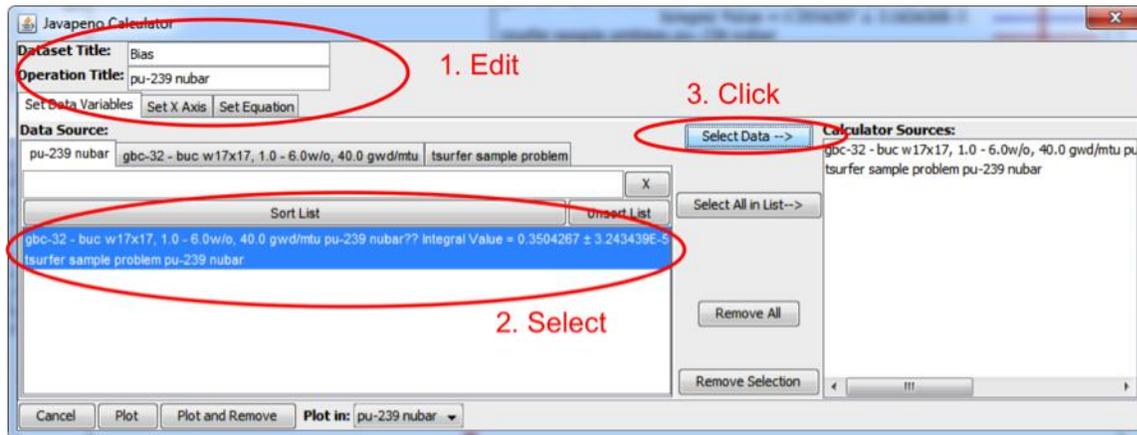


Figure M20.6.16. Javapeno calculator with information populated.

The **Set Equation** tab, shown in Figure M20.6.17, displays profiles that can be used in the operation and provides a text field for input and equation for the operation. Profiles are preceded by the variable that represents them in the equation.

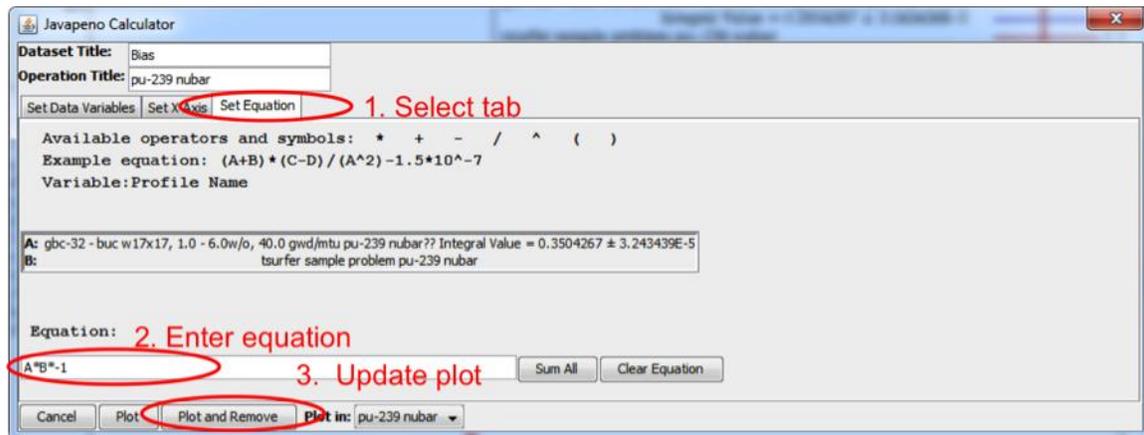


Figure M20.6.17. Javapeno calculator dialog for 2D plots.

Equation: The equation for the operation is entered in this textbox. The five basic mathematical operators are supported: $+$, $-$, $*$, $/$, $^$. The calculator also supports parenthesis $()$. The following rules apply to the equations:

1. Only explicit operations are permitted. For an example, instead of $3A$, the equation has to be $3*A$. Another example is instead of $A(3+B)$, the equation must be $A*(3+B)$. A final example is instead of $(3-B)(-A)$, the equation must be $(3-B)*(0-A)$ or $(3-B)*-A$.
2. Exponential notation, such as $1.2E-5$, is not supported. Instead use non-exponential base scientific notation, such as $1.2*10^{-5}$.

Plot: Plot the operation profile in the current plot. All other profiles will be left alone.

Plot and Remove: Plot the operation profile in the current plot. All other profiles will be removed.

Cancel: No operation will be performed.

Plot in: Location to place operation plot, either in an existing plot or a new plot.

The **Set X-Axis** tab can be used to select another profile as the x-axis data for the calculated profile. This is especially useful for ORIGEN data plotted from OPUS .plt files where it is desirable to plot one concentration as the function of another.

M20.7 POP-UP MENUS

The various pop-up menus are described in this section.

M20.7.1 SINGLE-SELECTION POP-UP

The single section pop-up menu, shown in Figure M20.7.1 for 2D plots, and in Figure M20.7.2 for 3D plots, is displayed when the user right-clicks on the reaction list with only one reaction selected.

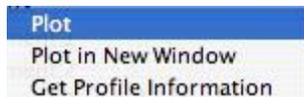


Figure M20.7.1. Single-selection pop-up for 2D plots.



Figure M20.7.2. Single-selection pop-up for 3D plots.

Plot (2D plots): This option is only displayed if the selected reaction is 2D and the currently selected window contains a 2D plot. The selected reaction will be plotted in the currently selected window.

Plot (3D plots): This option is only displayed if the selected reaction is 3D and the currently selected window contains a 3D plot. The selected data will replace the current data in the plot.

Plot in New Window: This option will plot the selected reaction in a new window.

Get Profile Information (KMART and SEN only): Displays a pop-up window containing additional information on the selected reaction.

Plot Std. Dev. By Group (COVERX only): This option is only displayed if the selected reaction is a COVERX reaction. It will plot the standard deviation of the selected COVERX reaction by energy group number in the current window (if it only contains a 2D plot), or create a new window containing the standard deviation.

Plot Std. Dev. By Energy (COVERX only): This option is only displayed if the selected reaction is a COVERX reaction. It will plot the standard deviation of the selected COVERX reaction by energy in the current window (if it only contains a 2D plot), or create a new window containing the standard deviation.

Plot Std. Dev. By Group in New Window (COVERX only): This option is only displayed if the selected reaction is a COVERX reaction. It will plot the standard deviation of the selected COVERX reaction by energy group number in a new window.

Plot Std. Dev. By Energy in New Window (COVERX only): This option is only displayed if the selected reaction is a COVERX reaction. It will plot the standard deviation of the selected COVERX reaction by energy in a new window.

Perform Operations: Open the **Javapeno Calculator** to perform mathematical operations.

M20.7.2 MULTIPLE-SELECTION POP-UP

The multiple selection pop-up menu, shown in Figure M20.7.3, is displayed when the user right-clicks on the **Reaction List** with more than one reaction selected.



Figure M20.7.3. Multiple-selection pop-up.

Plot All in Current Window (2D only): This option will only be displayed if all of the selected reactions are 2D and the current window only contains a 2D plot. It will plot all of the selected reactions in the current window.

Plot All in New Windows (2D only): This option will plot all of the selected reactions in a new window.

Plot All in Separate Windows: This option will plot each selected reaction in its own window.

Plot All in Current Window (3D in separate window): This option will only be displayed if a mixture of 2D and 3D reactions are selected and the currently selected window only contains a 2D plot. It will plot all of the selected 2D plots in the current window and create a new window for each selected 3D reaction.

Plot All in New Window (3D in separate windows): This option will only be displayed if a mixture of 2D and 3D reactions are selected. It will plot all of the 2D reactions in a new window and plot each of the selected 3D reactions in its own window.

Plot All Std. Dev. By Group in Current Window (COVERX only): This option will only be displayed if the currently selected window only contains a 2D plot. This option will plot the standard deviation of the selected COVERX reactions by energy group number in the current window.

Plot All Std. Dev. By Energy in Current Window (COVERX only): This option will only be displayed if the currently selected window only contains a 2D plot. This option will plot the standard deviation of the selected COVERX reactions by energy in the current window.

Plot All Std. Dev. By Group in New Window (COVERX only): This option will plot the standard deviation of the selected COVERX reactions by energy group number in a new window.

Plot All Std. Dev. By Energy in New Window (COVERX only): This option will plot the standard deviation of the selected COVERX reactions by energy in a new window.

Plot All Std. Dev. By Group in Separate Windows (COVERX only): This option will create a new window for each selected COVERX reaction. The new window will contain the standard deviation of the selected reaction by energy group number.

Plot All Std. Dev. By Energy in Separate Windows (COVERX only): This option will create a new window for each selected COVERX reaction. The new window will contain the standard deviation of the selected reaction by energy.

Perform Operations: Open the **Javapeno Calculator** to perform mathematical operations

M20.7.3 LEGEND POP-UP (2D ONLY)

The legend pop-up menu, shown in Figure M20.7.4, is displayed when the user right-clicks on a 2D plot's legend.



Figure M20.7.4. Legend pop-up for 2D plots.

Edit Selected Profile: This option will open the **Profile Information** (2D only) dialog.

Create Table for Selected Profile: This option will create a table containing only the selected profile.

Remove Selected Profile: This option will remove the selected profile from the plot.

Remove All: This option will remove all profiles from the plot.

Edit Legend Contents: This option will display the **Set Legend Format** (2D only) dialog.

Hide Legend: This option will hide the legend.

Perform Operations: Open the **Javapeno Calculator** to perform mathematical operations.

M20.7.4 PLOT POP-UP (2D)

The plot pop-up menu for 2D plots, shown in Figure M20.7.5, is displayed when the user right-clicks on a 2D plot, except on the legend area.

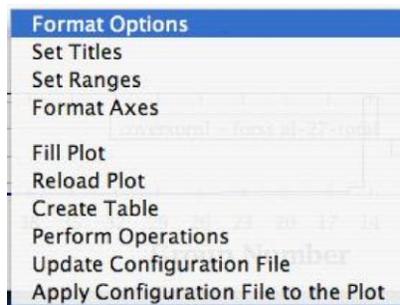


Figure M20.7.5. Plot pop-up for 2D plots.

Format Options: This option displays the **Set Plot Format** dialog **Options** tab.

Set Titles: This option displays the **Set Plot Format** dialog **Titles** tab.

Set Ranges: This option displays the **Set Plot Format** dialog **Ranges** tab.

Format Axes: This option displays the **Set Plot Format** dialog **Axes** tab.

Fill Plot: This option resets the axis ranges to the actual values and then redraws the plot.

Reload Plot: This option clears the plot, reloads each profile from its datafile, and then replots the profiles.

Create Table: This option creates a table containing all of the profiles on the plot.

Perform Operations: Open the **Javapeno Calculator** to perform mathematical operations.

Update Configuration File: This option opens the **Configuration File Editor** and uses the selected 2D plot as the source for the 2D settings in the editor.

Apply Configuration File to the Plot: This option applies the current configuration file settings to the plot.

M20.7.5 PLOT POP-UP (3D)

The plot pop-up menu, shown in Figure M20.7.6, is displayed when the user shift+right-clicks on a 3D plot.

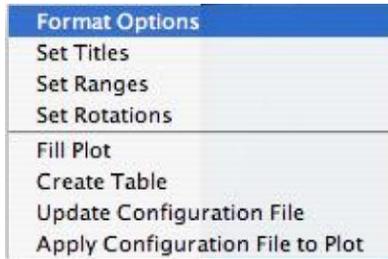


Figure M20.7.6. Plot pop-up for 3D plots.

Format Options: This option displays the **Set Plot Format** dialog **Plot Options (3D)** tab.

Set Titles: This option displays the **Set Plot Format** dialog **Plot Titles (3D)** tab.

Set Ranges: This option displays the **Set Plot Format** dialog **Plot Ranges (3D)** tab.

Set Rotations: This option displays the **Set Plot Format** dialog **Plot Rotation (3D Only)** tab.

Fill Plot: This option resets the axis ranges to the actual values and then redraws the plot.

Create Table: This option creates a table containing all of the profiles on the plot.

Update Configuration File: This option opens the Configuration File Editor and uses the selected 3-D plot as the source for the 3-D settings in the editor.

Apply Configuration File to the Plot: This option applies the current configuration file settings to the plot.

M20.8 REACTION LISTS

Javapeño contains a **Reaction List** window that displays the profiles that are available for plotting. Depending on the type of datafile opened, the **Reaction List** may be displayed as either a filterable list or a tree. AMPX datafiles are displayed as a tree. All other datafiles are displayed as a filterable list.

M20.8.1 TREE

Cross-section datafiles are displayed as a tree, as shown in Figure M20.8.1.



Figure M20.8.1. Tree for AMPX data.

The profiles stored in tree are grouped as follows:

1. Mixture (if available)
2. Nuclide
3. Neutron/Gamma/Gamma Production
4. Transfer Array/Reaction Cross Section
5. Temperature (if available)
6. MT symbol (if available)

Sort Tree: Sorts the tree as follows:

1. Sorts the top level of the tree (either nuclide or mixture) in ascending order, according to its ASCII value.
2. If the top level is a mixture, then the second level is sorted in ascending order according to its ASCII value.

M20.8.2 FILTERABLE LIST

All data files except cross-section data files are displayed as a filterable list, as shown in Figure M20.8.2.

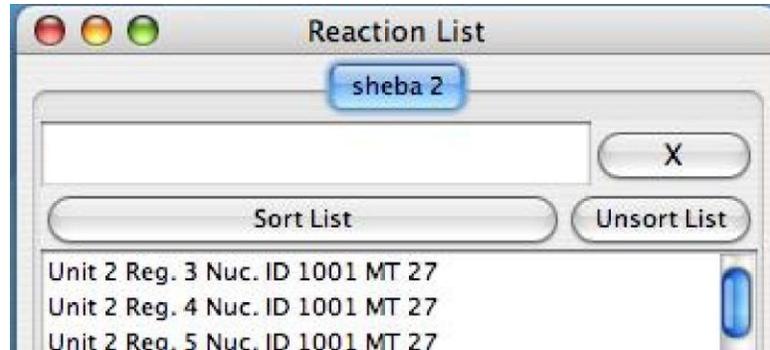


Figure M20.8.2. Filterable list.

To filter the list, type the desired word or phrase into the text field. Only profiles with labels containing the search term are displayed. NOTE: The filtering is case-sensitive. To clear the filter, click the **X** button.

X: Clears the filter.

Sort List: Sorts the list in ascending order according to the ASCII values of the profile labels.

M20.9 CONFIGURATION FILE EDITOR

Javapeño has the ability to store many settings in a configuration file so that user options can be saved and reused through multiple Javapeño sessions. The configuration file is called `.javapenopc` and is stored in the users' home directory. The **Configuration File Editor** dialog provides an interface to the configuration file. The dialog is always modal. The values in the configuration file are used as the default values for various settings when creating new objects (such as plots). Since they are default values, they do not take precedence over datafile settings (such as values explicitly specified in general 2D plot data files). Datafile settings for each of Javapeño's supported data types are described in Sect. M20.1 for the data type. It should be noted that the configuration file does take precedence over the stated defaults listed in Sect. M20.6.8.

The dialog has five tabs each containing various configuration settings and two buttons, as shown in Figure M20.9.1.

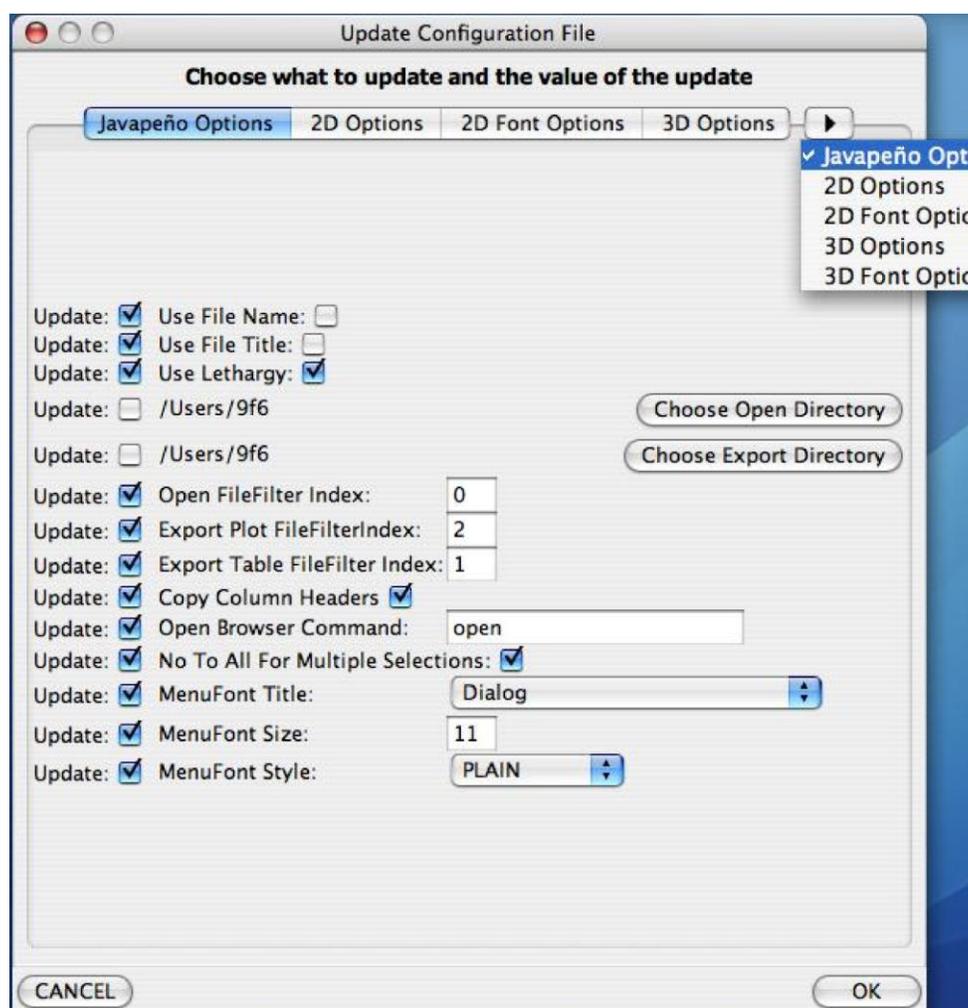


Figure M20.9.1. Configuration file editor.

Javapeno Options: This tab holds all of the plot independent options.

2D Options: This tab holds all of the 2D options (except fonts).

2D Font Options: This tab holds all of the 2D font options.

3D Options: This tab holds all of the 3D options (except fonts).

3D Font Options: This tab holds all of the 3D font options.

OK Button: This button will update the configuration file with all of the settings that are selected to be updated. New objects (such as plots) will also use the updated settings.

Cancel Button: This button will close the dialog. No changes or updates will occur.

M20.9.1 JAVAPEÑO OPTIONS

The **Javapeño Options** tab, shown in Figure M20.9.2, holds all of the plot independent options. To update a setting, check the **Update:** checkbox for the setting and set the setting's value.

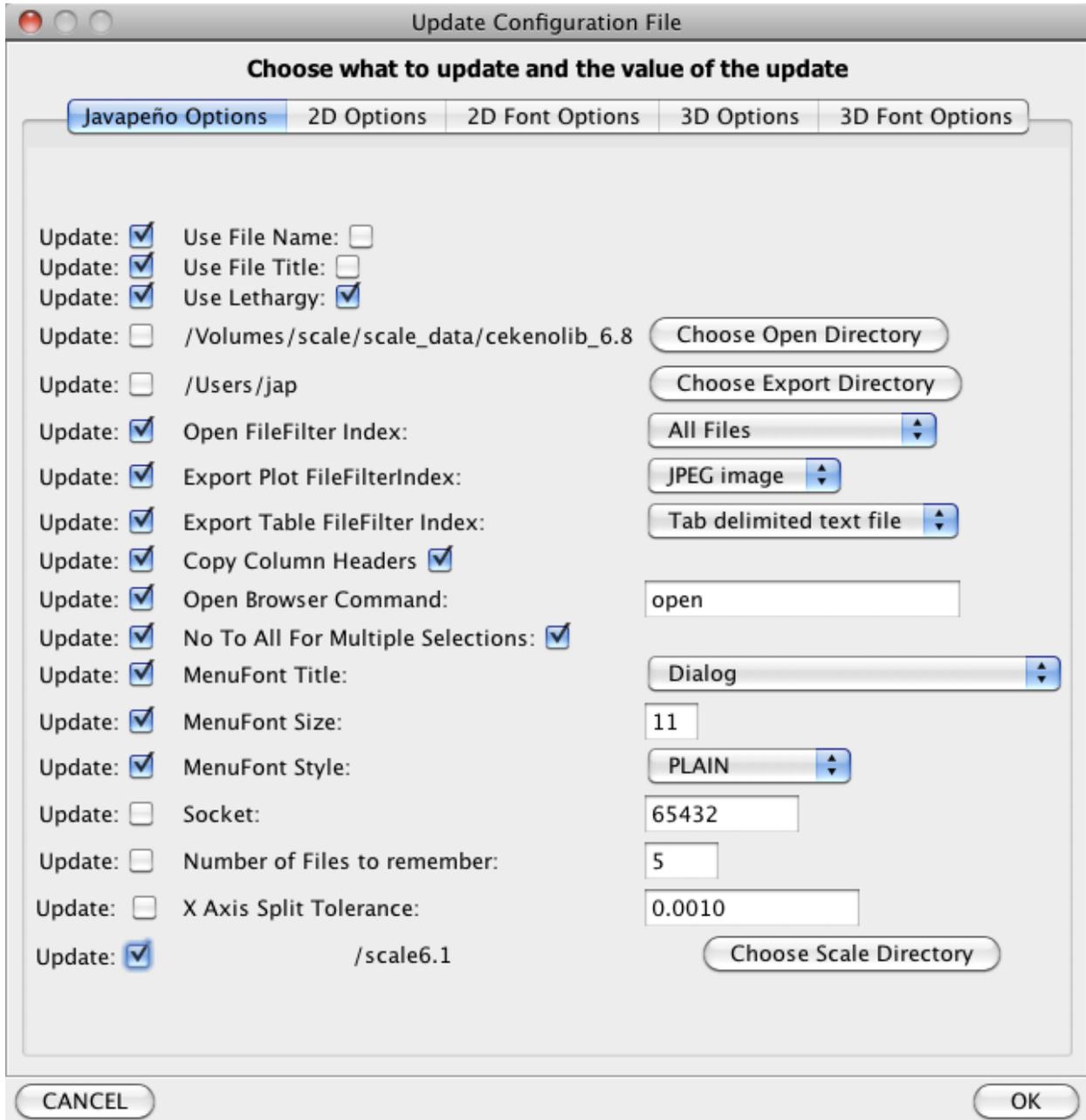


Figure M20.9.2. Javapeño options in configuration file editor.

Use File Name: Use the data file's file name in the **Reaction List** (or tree) tab.

Use File Title: Use the data file's file title in the **Reaction List** (or tree) tab.

Use Lethargy: Make histogram plots with energy on the x-axis on a per unit lethargy basis.

Open Directory: This is the default location for the **Open Dataset** or **Open Plot** dialog boxes.

Export Directory: This is the default location for the **Export** dialog (both plot and table).

Open FileFilter Index: This is the index value for the file type filter in the **Open Dataset** dialog box. This must be a value ≥ 0 and corresponds to the index of the item selected in the **File Format** pop-up in the **Open** dialog box, where the index of the first item is 0.

Export Plot FileFilter Index: This is the index value for the file type filter in the **Export** dialog box (plot). This must be a value ≥ 0 and corresponds to the index of the item selected in the **File Format** pop-up in the **Save** dialog box, where the index of the first item is 0.

Export Table FileFilter Index: This is the index value for the file type filter in the **Export** dialog box (table). This must be a value ≥ 0 and corresponds to the index of the item selected in the **File Format** pop-up in the **Save** dialog box, where the index of the first item is 0.

Copy Column Headers: Copy the table column headings when copying table data.

Open Browser Command: Command to pass to the operating system to launch a web browser.

No To All For Multiple Selections: If checked, no prompt will appear if an already plotted profile is added to a 2D plot through a multiple selection action (such as **Plot All**). Instead, the already plotted profile will be skipped during the action.

MenuFont Title: Sets the font to use for all of the menus. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **MenuFont Title**, **MenuFont Size**, and **MenuFont Style** labels with the selected font.

MenuFont Size: The point size to use for the menu font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **MenuFont Size** label with the new size.

MenuFont Style: Sets the style of the menu font. The drop-down list contains the valid styles. Changing the font style will update the **MenuFont Style** label with the selected style.

M20.9.2 2D OPTIONS

The 2D **Options** tab, shown in Figure M20.9.3, holds all of the 2D options (except fonts). To update a setting, check the **Update:** checkbox for the setting and set the setting's value.

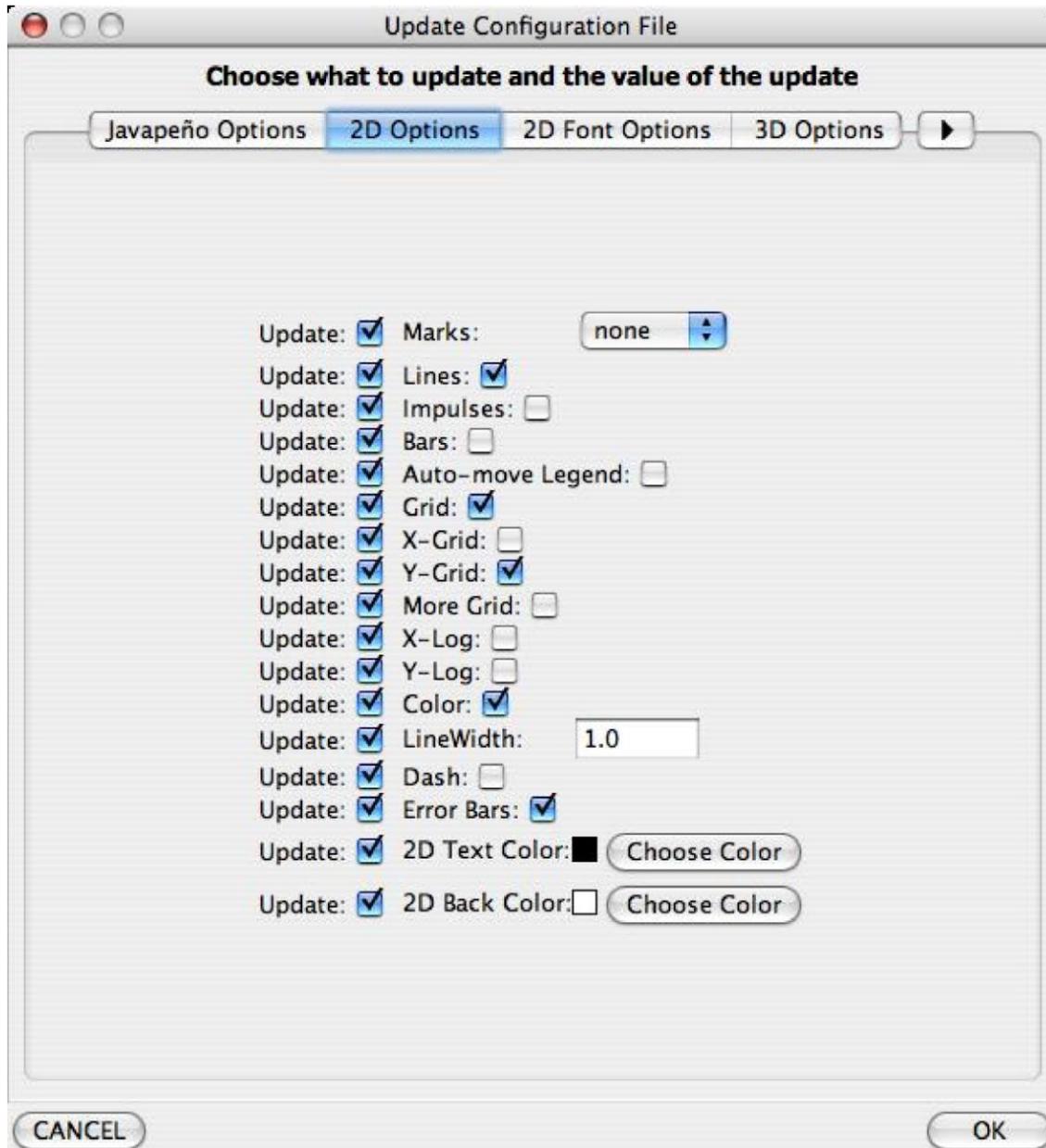


Figure M20.9.3. 2D options in configuration file editor.

Marks: Choose the type of μ marker to use on the 2D plot's data points.

Lines: If checked then the 2D plot's data points will be connected with lines.

Impulses: If selected, a line will be drawn from each data point to the x-axis (for log plots) or to $y=0$ (for linear plots).

Bars: If selected, 2D plots are treated as bar graphs by default.

Auto-move Legend: If selected, the automoving legend feature will be turned on by default for 2D plots.

Grid: If selected, x and y axis grid lines will be displayed.

X-Grid: If selected, x-axis grid lines will be displayed.

Y-Grid: if selected, y-axis grid lines will be displayed.

More Grid: If selected, more grid lines will be shown (if x or y gridlines are displayed).

X-Log: If selected, the x-axis will be in log scale.

Y-Log: If selected, the y-axis will be in log scale.

Color: If selected, the 2D plot will be in color.

LineWidth: The 2D plot linewidth. The value must be > 0 .

Dash: If selected, lines drawn between data points will be drawn as dashes.

Error Bars: If selected, error bars will be drawn on data points that contain uncertainty data.

2D Text Color: Specifies the color to use for the text on the 2D plot. The color swatch next to the button will be updated if the value is changed.

2D Back Color: Specifies the color to use for the background on the 2D plot. The color swatch next to the button will be updated if the value is changed.

M20.9.3 2D FONT OPTIONS

The **2D Font Options** tab, shown in Figure M20.9.4, holds all of the 2D font options. To update a setting, check the **Update:** checkbox for the setting and set the setting's value.

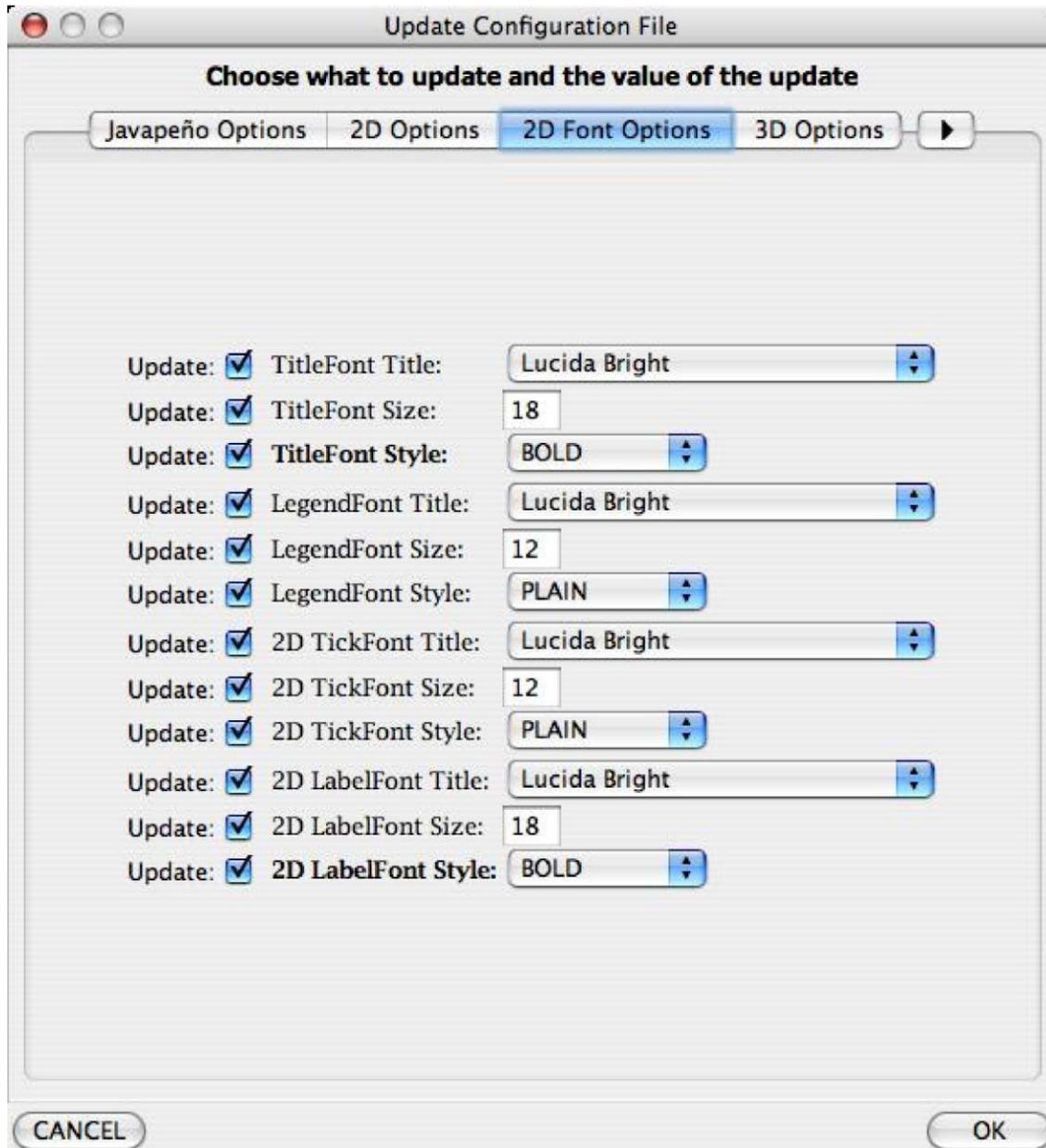


Figure M20.9.4. 2D font options in configuration file editor.

TitleFont Title: Sets the font to use for the 2D plot title. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **TitleFont Title**, **TitleFont Size**, and **TitleFont Style** labels with the selected font.

TitleFont Size: The point size to use for the title font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **TitleFont Size** label with the new size.

TitleFont Style: Sets the style of the title font. The drop-down list contains the valid styles. Changing the font style will update the **TitleFont Style** label with the selected style.

LegendFont Title: Sets the font to use for the 2D plot legend. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **LegendFont Title**, **LegendFont Size**, and **LegendFont Style** labels with the selected font.

LegendFont Size: The point size to use for the legend font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **LegendFont Size** label with the new size.

LegendFont Style: Sets the style of the legend font. The drop-down list contains the valid styles. Changing the font style will update the **LegendFont Style** label with the selected style.

2D TickFont Title: Sets the font to use for the 2D plot tick-value labels. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **2D TickFont Titles**, **2D TickFont Size**, and **2D TickFont Style** labels with the selected font.

2D TickFont Size: The point size to use for the 2D tick font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **2D TickFont Size** label with the new size.

2D TickFont Style: Sets the style of the 2D tick font. The drop-down list contains the valid styles. Changing the font style will update the **2D TickFont Style** label with the selected style.

2D LabelFont Title: Sets the font to use for the 2D plot axis labels. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **2D LabelFont Title**, **2D LabelFont Size**, and **2D LabelFont Style** labels with the selected font.

2D LabelFont Size: The point size to use for the 2D axis label font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **2D LabelFont Size** label with the new size.

2D LabelFont Style: Sets the style of the 2D axis label font. The drop-down list contains the valid styles. Changing the font style will update the **2D LabelFont Style** label with the selected style.

M20.9.4 3D OPTIONS

The **3D Options** tab, shown in Figure M20.9.5, holds all of the 3D options (except fonts). To update a setting, check the **Update:** checkbox for the setting and set the setting's value.

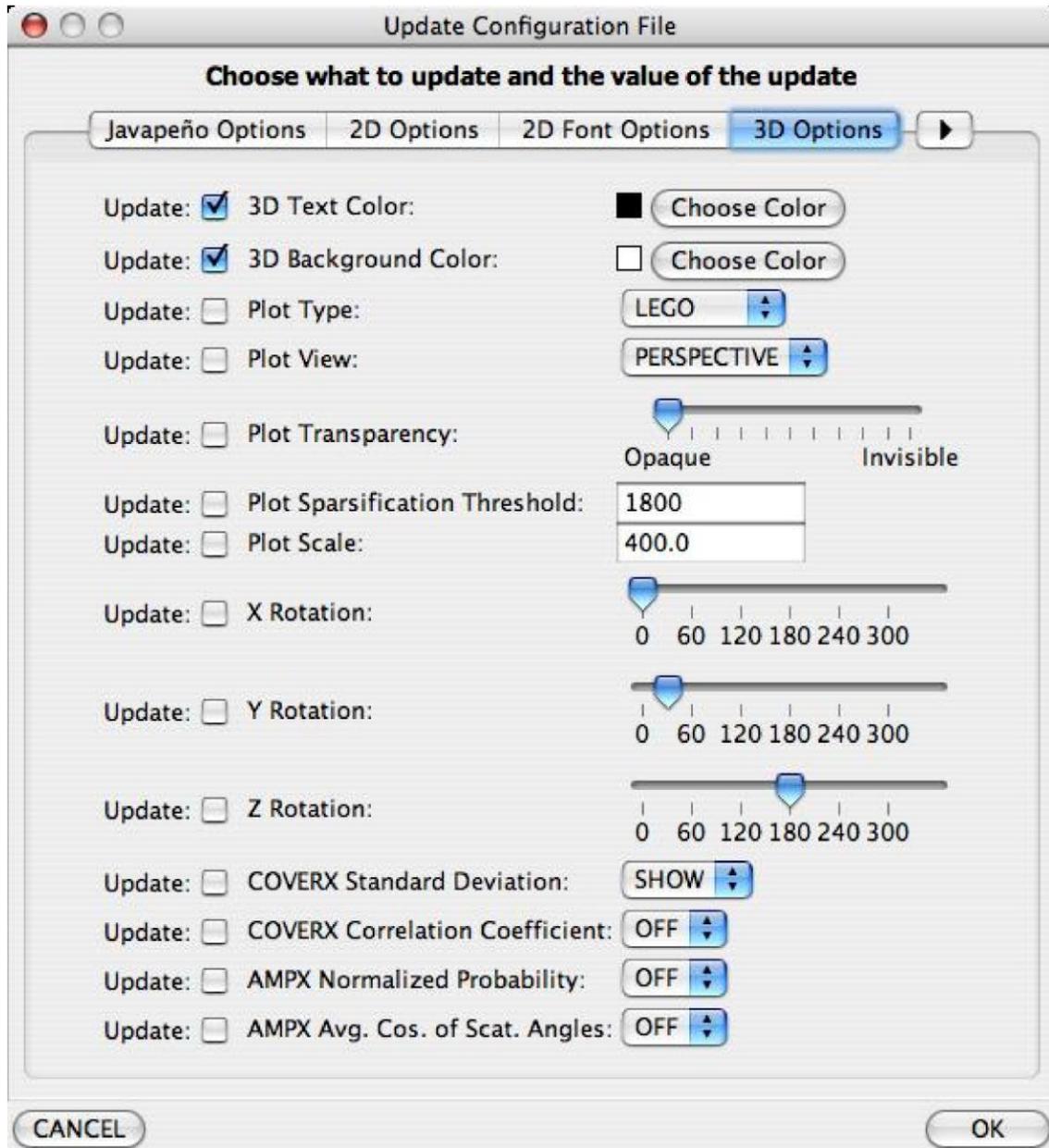


Figure M20.9.5. 3D options in configuration file editor.

3D Text Color: Specifies the color to use for the text on the 3D plot. The color swatch next to the button will be updated if the value is changed.

3D Background Color: Specifies the color to use for the background on the 3D plot. The color swatch next to the button will be updated if the value is changed.

Plot Type: Sets whether 3D plots are displayed in **Lego** or **Surface** mode.

Plot View: Sets whether 3D plots are view **Parallel** or **Perspective** mode.

Plot Transparency: The position of the slider sets how transparent (or opaque) to make the 3D plot.

Plot Sparification Threshold: This sets the maximum number of wires to display when the 3D plot is in wire-frame mode. This must be an integer value > 0 .

Plot Scale: This sets the 3D plot scale. The scale value is a straight multiplier for plot data and is an inverse multiplier for the plot text. This must be a value > 0 .

X Rotation: The position of the slider sets the startup x-axis rotation for the 3D plot.

Y Rotation: The position of the slider sets the startup y-axis rotation for the 3D plot.

Z Rotation: The position of the slider sets the startup z-axis rotation for the 3D plot.

COVERX Standard Deviation: Sets whether COVERX plots will have their associated standard deviation plots shown by default.

COVERX Correlation Coefficient: Sets whether COVERX plots will have correlation coefficient data displayed by default.

AMPX Normalized Probability: Sets whether AMPX P_0 plots will have normalized probability data displayed by default.

AMPX Avg. Cos. of Scat. Angles: Sets whether AMPX P_1 plots will have the average cosine of the scattering angles data displayed by default.

M20.9.5 3D FONT OPTIONS

The **3D Font Options** tab, shown in Figure M20.9.6, holds all of the 3D font options. To update a setting, check the **Update:** checkbox for the setting and set the setting's value.

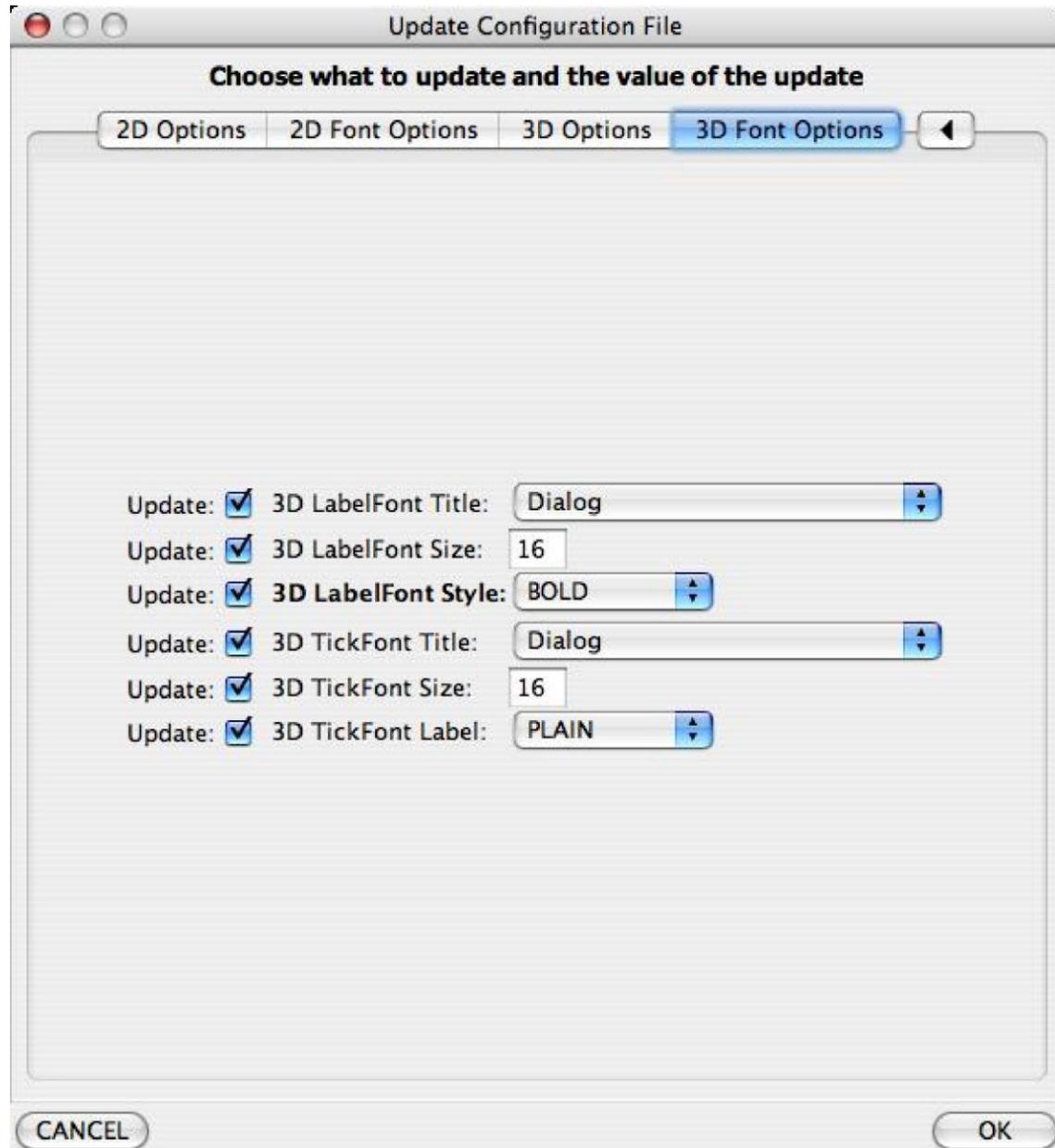


Figure M20.9.6. 3D font options in configuration file editor.

3D LabelFont Title: Sets the font to use for the 3D plot labels. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **3D LabelFont Title**, **3D LabelFont Size**, and **3D LabelFont Style** labels with the selected font.

3D LabelFont Size: The point size to use for the 3D label font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **3D LabelFont Size** label with the new size.

3D LabelFont Style: Sets the style of the 3D label font. The drop-down list contains the valid styles. Changing the font style will update the **3D LabelFont Style** label with the selected style.

3D TickFont Title: Sets the font to use for the 3D plot ticks. The drop-down list contains a list of fonts installed on the system. Changing the font name will update the **3D TickFont Title**, **3D TickFont Size**, and **3D TickFont Style** labels with the selected font.

3D TickFont Size: The point size to use for the 3D tick font. The value must be an integer and > 0 . Pressing **Enter** after changing the size will update the **3D TickFont Size** label with the new size.

3D TickFont Style: Sets the style of the 3D tick font. The drop-down list contains the valid styles. Changing the font style will update the **3D TickFont Style** label with the selected style.

M20.10 KNOWN ISSUES

While thoroughly tested, Javapeño is known to have the following issues:

1. Unpredictable colors/symbols when zooming/resizing a 3D plot (Mac)
 - a. Sometimes when zooming or resizing a 3D plot on a Mac computer, some discoloration or odd symbols may appear on the plot.
 - b. In most cases performing an action that causes the whole plot to be redrawn will fix this problem. An example of such action is setting the plot scale in the **Set Plot Format** dialog.
2. In applet mode the 3D plot moves up and down when scrolling (All)
 - a. This is a result of the interaction of the Java 3D object (3D plot) and the rest of Javapeño (applet).
 - b. The plot should be back in its original position when the scroll bar is returned to its original position. Another option is to pan the plot to the desired position after scrolling.
3. Some dialog boxes open behind plots (Mac)
 - a. Dialog boxes, such as **Set Plot Format**, open behind plots instead of on top of the plot windows.
 - b. This seems to be a Mac only issue. No work around has been found. It is believed to be a result of the Mac implementation of Java.
4. Java heap space errors (All, Applet or Application mode)
 - a. Please see M20.10.1.
5. Cannot increase the amount of memory allocated to Java.
 - a. You are unable to increase the value of NUM described in Sect. M20.10.1. This is usually caused in two ways:
 - i. The value of NUM is greater than the amount of RAM on the system.
 - ii. The value of NUM is greater than the amount of free RAM on the system. The JVM requires the value of NUM to be available in sequential blocks of memory.
 - b. If the cause is case i, then the only solution is installing more RAM.
 - c. If the cause is case ii, then try the following:
 - i. Close other applications, set NUM to the desired value, and then try launching Javapeño.
 - ii. Restart your computer, set NUM to the desired value, and then try launching Javapeño.

M20.10.1 CONFIGURING JAVA FOR 3D PLOTTING

Note that 3D plots require a lot of memory. Java, by default, does not allocate enough memory for its virtual machine to have more than a few (if any) 3D plots open. To fix this, please follow these steps:

1. For Javapeño in application mode: Just run the bat file/shell script provided with Javapeño. If you are still having problems, then you may need to alter the bat file/shell script.
 - a. Open the bat file/shell script in your favorite text editor.
 - b. Add (or modify) “-XmxNUMm” to the Java Runtime Parameters field (without quotes). NUM should be the amount of memory to give to Java. The m after NUM means megabytes (or million bytes)
 - c. Increase the value of NUM.
 - d. WARNING: Entering too large of a value for num will prevent Java from starting.

2. For Javapeño in applet mode:
 - a. Windows:
 - i. Open Control Panel and double left-click on the Java icon.
 - ii. Click on the Java tab.
 - iii. Click on the View button in the Java Applet Runtime Settings.
 - iv. Add (or modify) “-XmxNUMm” to the Java Runtime Parameters field (without quotes). NUM should be the amount of memory to give to Java. The m after NUM means megabytes (or million bytes)
 - v. WARNING: Entering too large of a value for NUM will prevent Java from starting.
 - b. Mac:
 - i. Open Finder.
 - ii. Click on Applications.
 - iii. Double-click on Utilities.
 - iv. Double-click on Java.
 - v. Double-click on J2SE 5.0.
 - vi. Double-click on Java Settings.
 - vii. Add (or modify) “-XmxNUMm” to the Java Applet Runtime Parameters field (without quotes). NUM should be the amount of memory to give to Java. The m after NUM means megabytes (or million bytes)
 - viii. WARNING: Entering too large of a value for NUM will prevent Java from starting.
 - c. Linux:
 - i. Launch ControlPanel from the Java JRE bin. The JRE bin should be located at <Java_Installation_Dir>/jre/bin.
 - ii. Click on the Java tab.
 - iii. Click on the View button in the Java Applet Runtime Settings.
 - iv. Add (or modify) “-XmxNUMm” to the Java Runtime Parameters field (without quotes). NUM should be the amount of memory to give to Java. The m after NUM means megabytes (or million bytes)
 - v. WARNING: Entering too large of a value for NUM will prevent Java from starting.

M20.10.2 SPECIAL APPLLET INSTRUCTIONS

Javapeño includes a full featured applet mode. All features included in the application mode can now be used in the applet mode. To accomplish this, the Javapeño applet had to be signed with a security certificate. Before running Javapeño in applet mode, the certificate must be accepted. Please follow these steps to accept the certificate:

When opening a SCALE-generated HTML output page containing the Javapeño applet, you may see a dialog similar to that shown in Figure M20.10.1.



Figure M20.10.1. Digital signature dialog for Javapeño applet.

When clicking on **More Information...** in the lower right corner of the dialog, the dialog shown in Figure M20.10.2 will appear.



Figure M20.10.2. More information dialog for digital signature for Javapeño applet.

Clicking on **Certificate Details...**, verify that the following information is correct.

- The version value should be: V1
- Serial Number should be: 1152193411
- Signature Algorithm should be: SHA1withDSA
- Issuer should be:
 - CN=Javapeño,
 - OU=NSTD,
 - O=Oak Ridge National Laboratory,
 - L=Oak Ridge,
 - ST=TN,
 - C=US
- Validity should be:
 - From Thu Jul 06 09:43:32 EDT 2006,
 - To: Sun Jul 03 09:43:31 EDT 2016
- Subject should be:
 - CN=Javapeño,
 - OU=NSTD,
 - O=Oak Ridge National Laboratory,
 - L=Oak Ridge,
 - ST=TN
 - C=US
- The signature contains three lines. Each line contains (up to) 16 hexadecimal pairs followed by a “readable” version of the line. Please verify that the hexadecimal pairs match:
 - Line 0000: 30 2C 02 14 43 B0 6A 05 9D 92 72 24 6F D7 A5 77
 - Line 0010: B0 BB 8A 32 B8 14 E4 3D 02 14 7E 2B F4 83 BC 55
 - Line 0020: E9 95 F2 E9 98 03 95 BE DB 2C B4 2E 48 7E

If all of the above matches, the applet has been authenticated. Click **Close** on the **Details** dialog. Click **Close** on the **More Information** dialog. Check the box to always trust content from this publisher. Then click **Run**. The applet should now load. If you are using Internet Explorer, you may need to allow active content on the webpage and then click on the applet.