CERN Program Library Long Writeup Q121

PAW++

Physics Analysis Workstation

User's Guide

Application Software Group

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Related Manuals

This document can be complemented by the following manuals:

- PAW, Physics Analysis Workstation, The Complete Reference [?]
- COMIS, Compilation and Interpretation System [?]
- HBOOK User Guide — Version 4 [?]
- HIGZ — High level Interface to Graphics and ZEBRA [?]
- HPLOT User Guide — Version 5 [?]
- KUIP — Kit for a User Interface Package [?]
- MINUIT — Function Minimization and Error Analysis [?]
- ZEBRA — Data Structure Management System [?]

This document has been produced using LaTeX [?] with the `cernman` style option, developed at CERN. All pictures shown are produced with PAW and are included in PostScript [?] format in the manual.

A PostScript file `paw++.ps`, containing a complete printable version of this manual, can be obtained by anonymous ftp as follows (commands to be typed by the user are underlined):

```
ftp asisftp.cern.ch
Trying 128.141.201.136...
Connected to asisftp.cern.ch.
220 asis01 FTP server (Version 6.10 Mon Apr 13 15:59:17 MET DST 1992) ready.
Name (asis01:username): anonymous
331 Guest login ok, send e-mail address as password.
Password: your_mailaddress
ftp> cd cernlib/doc/ps.dir
ftp> get paw++.ps.gz
ftp> get paw++.ps       # automatic uncompression
ftp> quit
```

Table of Contents

Chapter 1: PAW++: A guided tour

PAW++ is a powerful OSF/Motif based Graphical User Interface to the popular Physics Analysis Workstation PAW. The graphical user interface makes the full and rich command set of PAW available to even the naive user. Simple point and click operations are enough to execute commands that were previously accessable only to expert users.

At present it is available on Unix workstations and VAX/VMS.

PAW++ has, in addition to the conventional command line and macro types of interface, the following dialogue modes:

Pull Down menus They are useful to understand the command structure of the PAW system.

Command panels They give a "panel representation" of the commands.

Object Browser This is in many ways similar to the well-known browsers in the PC/MAC utilities or the visual tools on some workstations.

Direct graphics One can click in the graphics area and identify automatically which object has been selected. A pop-up menu appears with a list of possible actions on this object. For example, by clicking with the right mouse button on a histogram, one can make directly a gaussian fit, a smoothing etc. Pop-up menus are available by clicking on the **Graphics Window** to automatically produce PostScript, Encapsulated PostScript, LaTeX files or print the picture on your local printer.

Histogram Style Panel Buttons are available to change histogram attributes, colours, line styles, fonts, and axes representation. 2-D histograms can be rotated interactively. Zooming and rebinning can be performed interactivaly in real time.

Ntuple Viewer Just click on the Ntuple column name to histogram the column.

The new system is largely self-explanatory. Only a subset of PAW has been converted to this new user interface, but work is currently in progress to offer many new facilities in future releases.

On all system on which the CERNLIB is installed, it is enough to type `paw++` to enter the system.

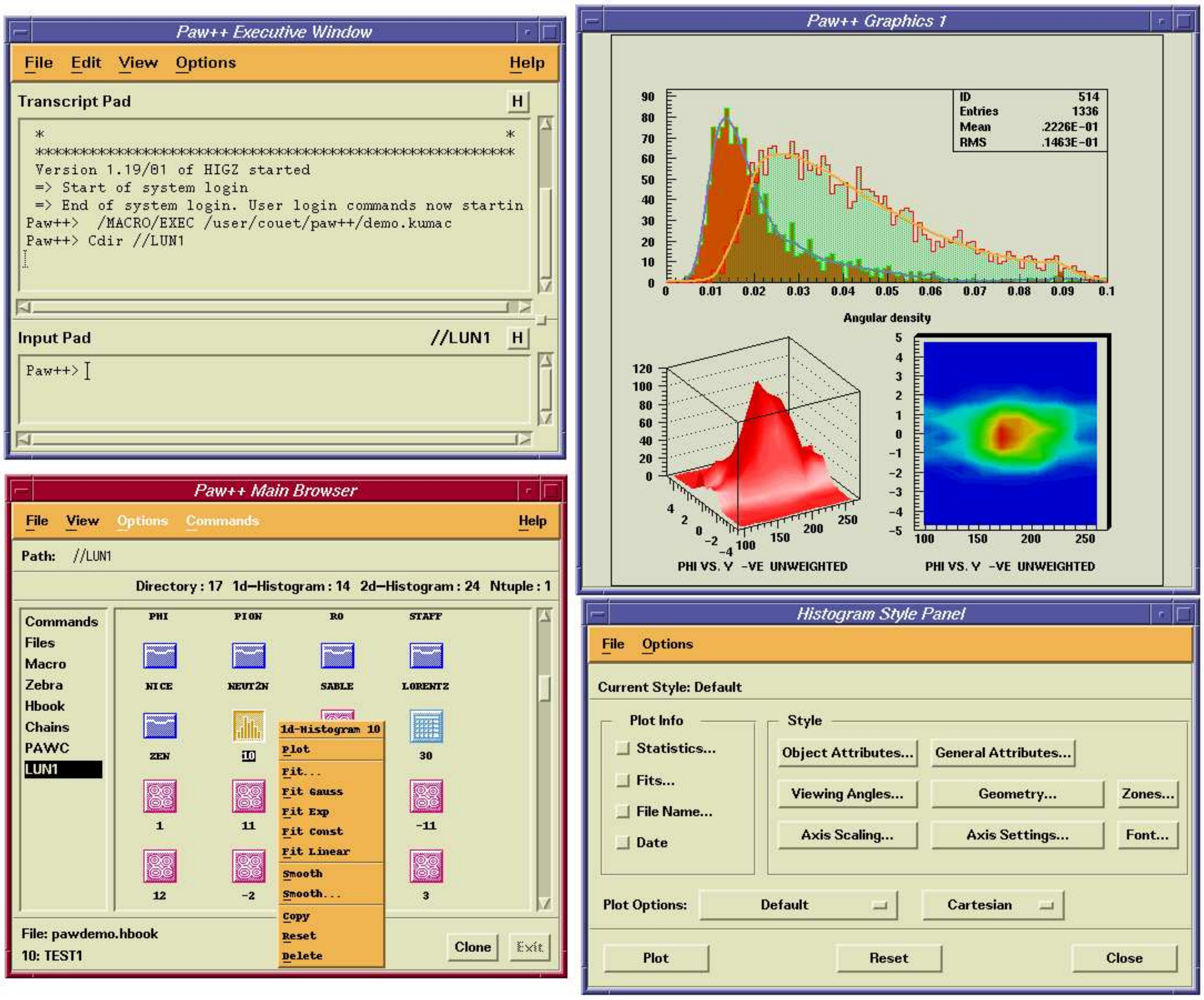
PAW++ starts up with three windows on the screen:

The "PAW++ Executive Window" Which is compose with a menu bar, a **Transcript Pad**, a current working directory indicator and an **Input Pad**.

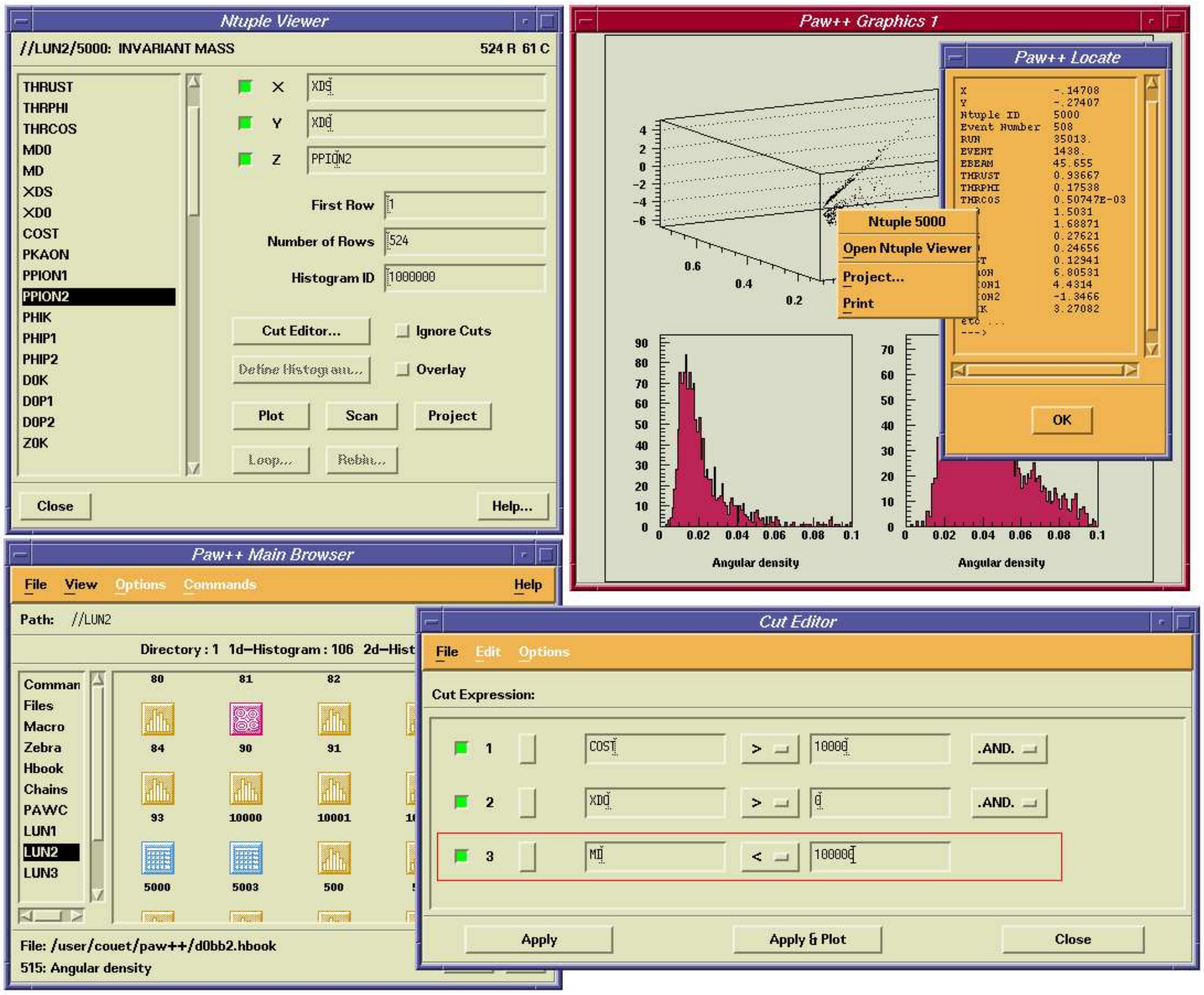
The "PAW++ Graphics 1" window displays the graphics output from HIGZ/X11. Objects, e.g. histograms, displayed in the **Graphics Window** can be manipulated by pointing at them, pressing the right mouse button and selecting an operation from the popup menu. Pointing at the edge of the **Graphics Window** (between displayed object and window border) brings up a general popup menu. Up to 4 additional **Graphics Window** can be opened by selecting "Open New Window" from this menu.

The "PAW++ Main Browser" displays all browsable classes and connected hbook files. Up to 4 additional browsers can be opened via the "View" menu of the "PAW++ **Executive Window**" or via the "Clone" button on the browsers. For more information on the browsers see the "Help" menus.

1.1 Overview



- The upper left corner is the PAW++ **Executive Window**, with its **Input Pad** at the bottom and the **Transcript Pad** at the top.
- The PAW++ Browser, where the various entities (pictures, 1-D and 2-D histograms and Ntuples) are all defined with their own symbol, is shown bottom left. A "pop-up" menu has been activated for the chosen 1-D histogram. Several actions like `Plot`, `Smooth`, `Fit` etc... can be performed via this menu.
- The **Graphics Window** is seen top right. A 1-D view of the data points and two 2-D views (a Surface-plot and a colored contour plot) are shown. On the 1-D view, two 1-D histograms are superimposed. The results of a "smoothing" type of fit to the data points is also drawn. Information about the data and the fit can be found in the inserted window.
- The **Histogram Style Panel** at the lower right allows graphics attributes of the histogram to be controlled.



– The upper left corner shows the **Ntuple Viewer**. The left window shows the name of the various variables, characterizing the selected Ntuple. Other windows and press-buttons specify which combinations of the various variables and which events have to be treated (plotted, scanned, …).

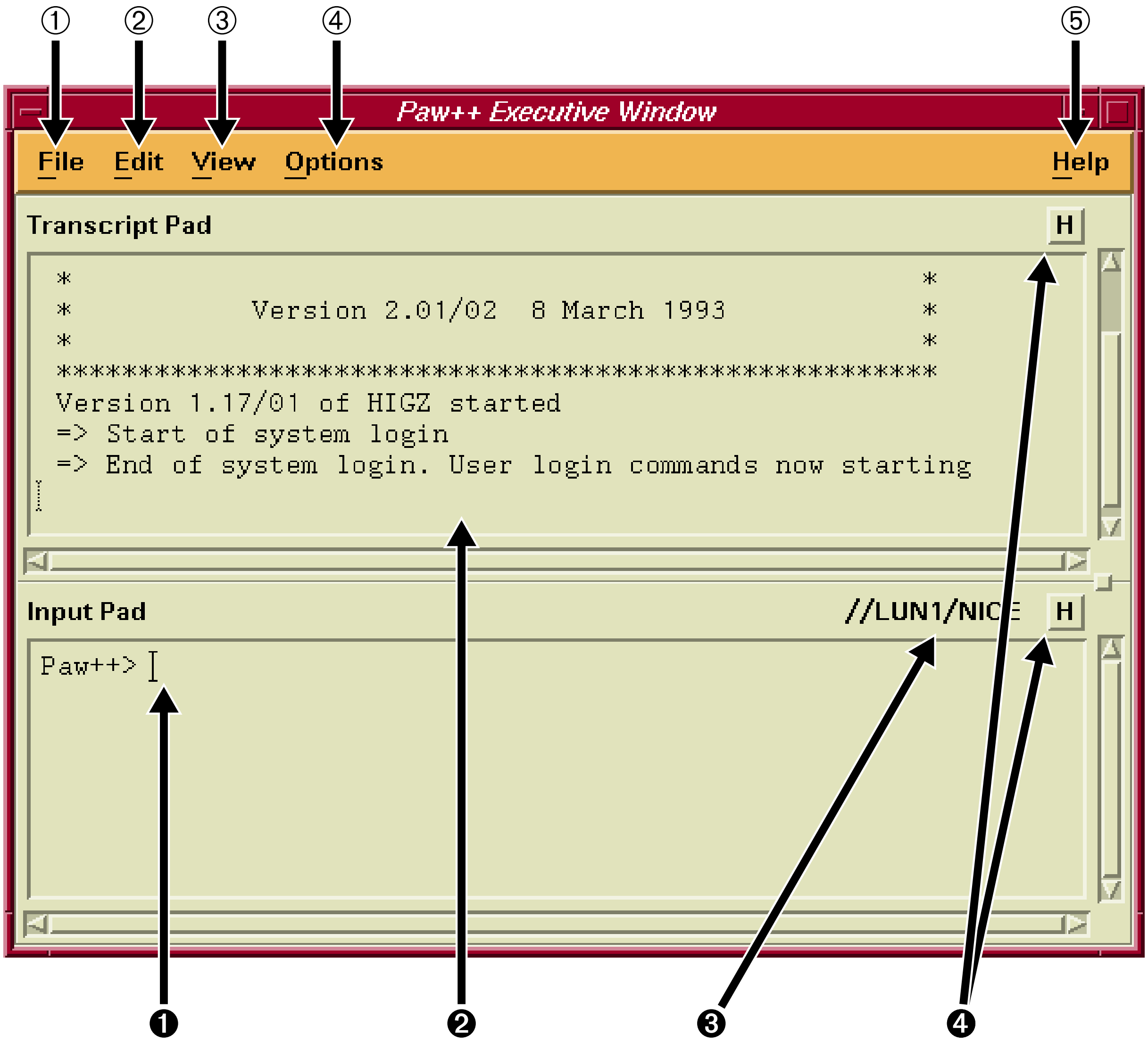
– The lower left contains the PAW++ Browser, with this time an Ntuple selected. A double on a Ntuple icon open automatically the **Ntuple Viewer** on the active Ntuple.

– The **Graphics Window** is seen top right and shows a 3-D view of the combination of three variables, whose cuts are specified with the **Cut Editor** (see below).

– Direct graphics interactions with Ntuple data are possible. Just by clicking on a point in the **Graphics Window**, the event description is displayed in the **PAW++ Locate** window.

– The **Cut Editor** panel, shown at the lower right, allows various combinations of cuts to be specified and applied.

1.2 The Executive Window



This window allows to type commands on the keyboard like in the normal PAW system. In fact this window is the `kxterm` program provide with the KUIP package.

This terminal emulator combines the best features from the (now defunct) Apollo DM pads (like: **Input Pad** and **Transcript Pad**, automatic file backup of **Transcript Pad**, string search in pads, etc.) and the Korn shell emacs-style command line editing and command line recall mechanism.

Commands are typed in the **Input Pad** ❶ behind the application prompt. Via the toggle buttons H ❹ the **Input Pad** and/or **Transcript Pad** can be placed in hold mode. In hold mode one can paste or type a number of commands into the **Input Pad** and edit them without sending the commands to the application. Releasing the hold button will causes `kxterm` to submit all lines, upto the line containing the cursor, to the application. To submit the lines below the cursor, just move the cursor down. In this way one can still edit the lines just before they are being submitted to the application.

❶ In the **Input Pad** one can type, retrieve and edit command line with the help of a Korn shell emacs-style command line editing mode. See in appendix the complete list of the editing keys.
❷ The **Transcript Pad** ❷ shows the executed commands and command output. When in hold mode ❹ the transcript pad does not scroll to make the new text visible. Mouse operations like “Copy Paste” are allowed in the transcript pad. It is also possible to search a character string (see the menu bar description).
❸ Every time the current directory is changed, the **Current working directory indicator** is updated. The current working directory can be changed by clicking on a item in the **PATH window** of the **Main Browser** or by clicking on a icon directory in the **Main Browser** itself.
❹ Hold buttons.

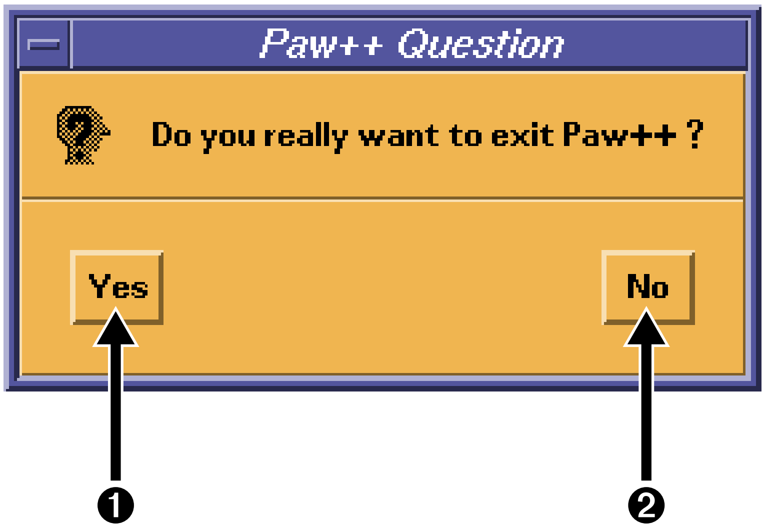
① Allows manipulation of the **Transcript Pad**.
② Allows character string seach, copy/paste in the **Transcript Pad**.
③ Allows to invoke other panel.
④ Some general settings are available in this menu.
⑤ Online help.

1.2.1 The Executive Window menu bar

In this section, is describe the full functionality of the pull down menu available in the Menu Bar of the **Executive Window**.

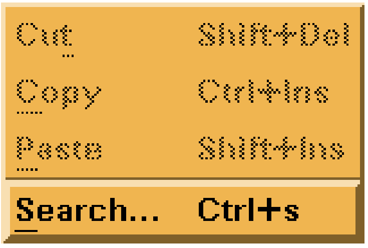
File

About Kxterm...	Displays version information about Kxterm.
About ¡Application¿...	Displays version information about the application Kxterm is servicing.
Save Transcript	Write the contents of the transcript pad to the current file. If there is no current file a file selection box will appear.
Save Transcript As...	Write the contents of the transcript pad to a user-specified file.
Print...	Print the contents of the transcript pad (not yet implemented).
Kill	Send a SIGINT signal to the application to cause it to core dump. This is useful when the application is hanging or blocked. Use only in emergency situations.
Exit	Exit Kxterm and the application. When this option is selected or when `EXIT` is typed in the **Input Pad**, the following panel is displayed:



❶ The exit is performed.
❷ The exit procedure is canceled.

Edit



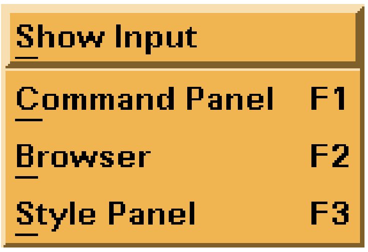
Cut Remove the selected text. The selected text is written to the Cut and Paste buffer. Using the "Paste" function, it can be written to any X11program. In the transcript pad "Cut" defaults to the "Copy" function.

Copy Copy the selected text. The selected text is written to the Cut and Paste buffer. Using the "Paste" function, it can be written to any X11program.

Paste Insert text from the Cut and Paste buffer at the cursor location into the **Input Pad**.

Search... Search for a text string in the transcript pad.

View



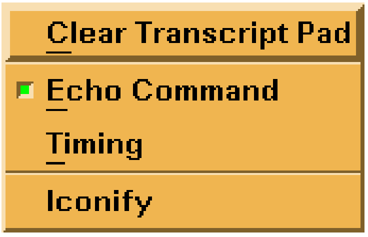
Show Input Show in a window all commands entered via the **Input Pad**.

Command Panel

Browser

Style Panel

Options



Clear Transcript Pad Clear all text off of the top of the transcript pad.

Echo Command Echo executed commands in transcript pad.

Timing Report command execution time (real and CPU time).

Iconify Iconify Kxterm and all windows of the application.

Help

On Kxterm The help you are currently reading.

On Edit Keys Help on the emacs-style edit key sequences.

1.3 The Main Browser

The KUIP/Motif Browser interface is a general tool to display and manipulate a tree structure of objects which are defined either by KUIP itself (commands, files, macros, etc.) or by the application.

The “Clone” button at the bottom creates a new independent browser window. The “Exit” button destroys the browser window. The **Main Browser** cannot be destroyed (only iconized).

The middle part of the browser is divided into two windows:

1. The left hand “class window” shows the list of all currently connected classes of objects. Some classes, e.g. the command tree and the file system, are predefined. Other classes allow to attach new files using the commands in the “File” menu. Clicking with the left mouse button on one of the items in the class window displays its content in the other window. Pressing the right mouse button inside the class window shows a popup menu of possible operations, e.g. creating a new object in the current directory.

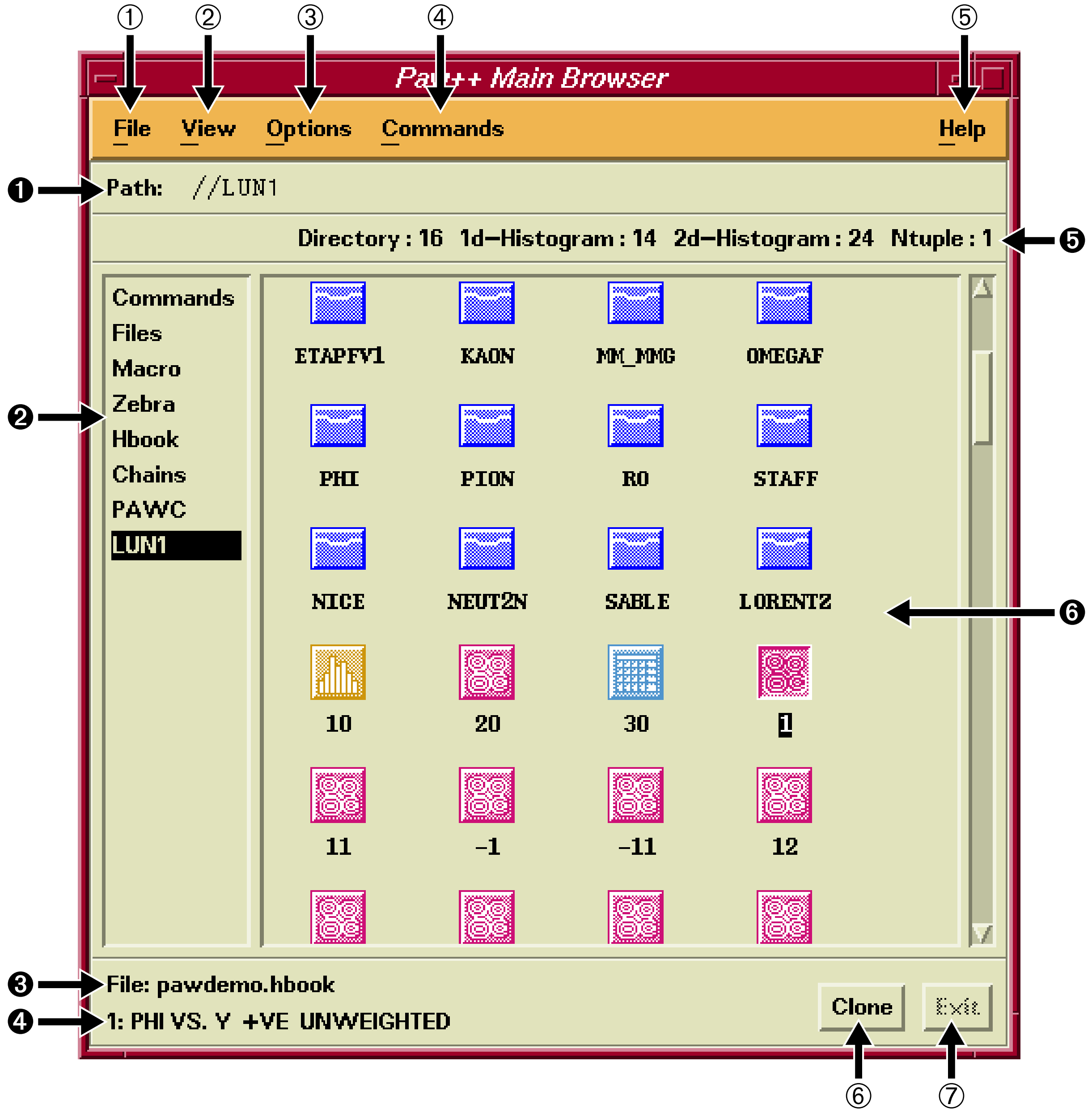
2. The right hand “object window” shows the content of the currently selected class directory. The “View” menu allows the change the way objects are displayed, i.e. to choose the icon size and the amount of information shown for each object. Objects are selected by clicking on them with the left mouse button. Pressing the right mouse button pops up a menu of possible operations depending on the object type.

An item in a popup menu is selected by pointing at the corresponding line and releasing the right mouse button. Double clicking with the left mouse button is equivalent to selecting the first menu item.

Each menu item executes a command sequence where the name of the selected object is filled into the appropriate place. By default the command is executed immediately whenever possible. The commands executed can be seen by selecting “Echo Commands” in the “Options” menu of the **Executive Window**. In case some mandatory parameters are missing a panel is displayed where the remaining arguments have to be filled in. The command is executed then by pressing the “OK” or “Execute” button in that panel. (If it is not the last one in the sequence of commands bound to the menu item the application is blocked until the “OK” or “Cancel” button is pressed.)

The immediate command execution can be inhibited by holding down the CTRL-key BEFORE pressing the right mouse button. Some popup menus also contain different menu item for immediate and delayed execution, e.g. “Execute” and “Execute...” for class “Commands”

The path of the currently selected directory is always displayed below the menu bar. The directory can be changed by pointing at the tail of the wanted subpath and clicking the left mouse button. Clicking a second time on the same path segment performs the directory change and updates the object window. To go downwards in the directory hierarchy double click on the subdirectory displayed in the object window.



❶ Current PATH (“PATH window”).
❷ Class window.
❸ Name of file currently selected in the class window.

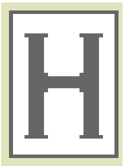
❹ Name of the object currently selected in the object window.
❺ Number and type of object currenlty in the the object window.
❻ Object window.

① File menu.
② View menu.
③ Options menu.
④ Commands menu.
⑤ Help menu.
⑥ Clone button.
⑦ Exit button.

1.3.1 The objects in the "object window"

This section describes all the PAW++ object available in the **Main Browser**.

HBOOK files



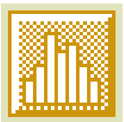
Double click with the left mouse button on this icon, open the corresponfing HBOOK file with the command `HISTOGRAM/FILE`.

Select a **HBOOK files** icon with the left mouse button and press the right mouse button to obtain the following menu:

Open	Open the highlighted HBOOK file in read-only mode.
Open Update Mode	Open the highlighted HBOOK file in update mode.

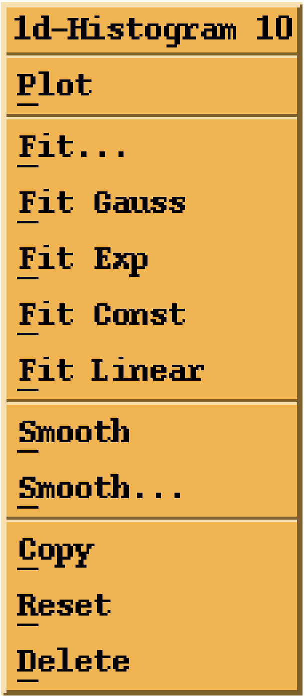
Note that the HBOOK file name is displayed in the menu title.

1D histograms



Double click with the left mouse button on this icon, produce the plot of the corresponding histogram with the command `HISTOGRAM/PLOT`. The histogram becomes the current histogram for the **Histogram Style Panel**.

Select a **1D histograms** icon with the left mouse button and press the right mouse button to obtain the following menu:



Plot Plot the corresponding histogram (default action). The histogram becomes the current histogram for the **Histogram Style Panel**.

Fit... Perform the command `Histo/Fit` on the corresponding histogram. The command panel is automatically displayed

Fit Gauss Perfom a gaussian fit on the corresponding histogram.

Fit Exp Perform an exponential fit on the corresponding histogram.

Fit Const Perform a `P0` fit on the corresponding histogram.

Fit Linear Perform a `P1` fit on the corresponding histogram.

Smooth Smooth the corresponding histogram.

Smooth... Perform the command `Smooth` on the corresponding histogram. The command panel is automatically invoked.

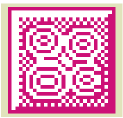
Copy Copy corresponding histogram onto an other histogram. The command panel is automatically invoked.

Reset Reset the corresponding histogram.

Delete Delete the corresponding histogram.

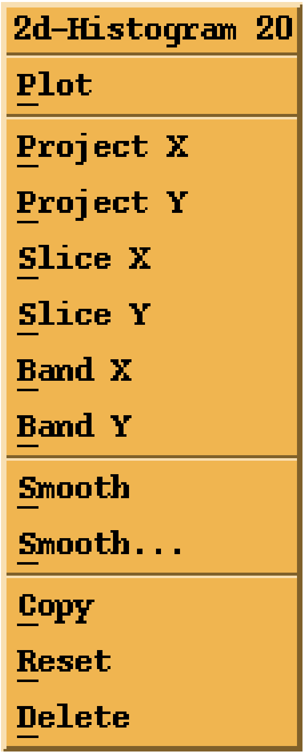
Note that the histogram identifier is displayed in the menu title.

2D histograms



Double click with the left mouse button on this icon, produce the plot of the corresponding histogram with the command `HISTOGRAM/PLOT`. The histogram becomes the current histogram for the **Histogram Style Panel**.

Select a **2D histograms** icon with the left mouse button and press the right mouse button to obtain the following menu:



Plot Plot the corresponding histogram (default action). The histogram becomes the current histogram for the **Histogram Style Panel**.

Project X Generate the `X` projection, perform the projection and plot the result (commands `ProX`, `Hi/Proj`, and `Hi/Plot`).

Project Y Generate the `Y` projection, perform the projection and plot the result (commands `ProY`, `Hi/Proj`, and `Hi/Plot`).

Slice X Generate the `X` slices, perform the projection and plot the first slice (commands `SliX`, `Hi/Proj`, and `Hi/Plot`).

Slice Y Generate the `Y` slices, perform the projection and plot the first slice (commands `SliY`, `Hi/Proj`, and `Hi/Plot`).

Band X Generate the `X` bands, perform the projection and plot the first band (commands `BanX`, `Hi/Proj`, and `Hi/Plot`).

Band Y Generate the `Y` bands, perform the projection and plot the first band (commands `BanY`, `Hi/Proj`, and `Hi/Plot`).

Smooth Smooth the corresponding histogram.

Smooth... Perform the command `Smooth` on the corresponding histogram. The command panel is automatically invoked.

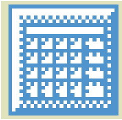
Copy Copy corresponding histogram onto an other histogram. The command panel is automatically invoked.

Reset Reset the corresponding histogram.

Delete Delete the corresponding histogram.

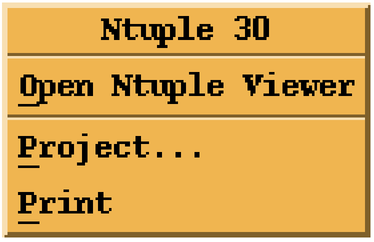
Note that the histogram identifier is displayed in the menu title.

Ntuples



Double click with the left mouse button on this icon, open the **Ntuple Viewer** on the corresponding Ntuple.

Select a **Ntuples** icon with the left mouse button and press the right mouse button to obtain the following menu:



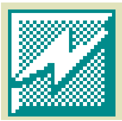
Open Ntuple Viewer Open Ntuple Viewer on the highlighted Ntuple.

Project... Project the highlighted Ntuple. The Command panel `Ntuple/Proj` is automatically invoked.

Print Print the highlighted Ntuple (Command `Ntuple/Print`).

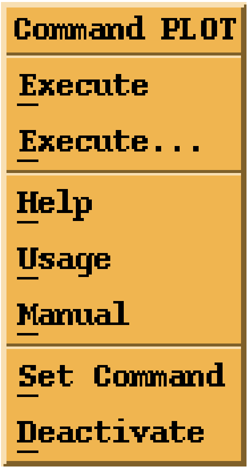
Note that the ntuple identifier is displayed in the menu title.

PAW **commands**



Double click with the left mouse button on this icon, execute the corresponding PAW command.

Select a PAW **commands** icon with the left mouse button and press the right mouse button to obtain the following menu:



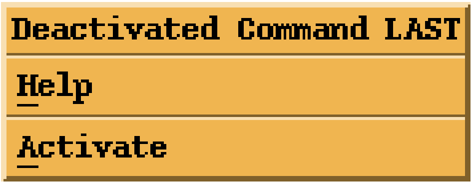
Execute	Execute the command with the default parameters. If a mandatory parameter is missing, the command panel is automatically invoked.
Execute...	Display the command panel.
Help	Display the help on the command.
Usage	Display the command usge in the **Transcript Pad** of the **Executive Window**.
Manual	Equivalent to `HELP`.
Set Command	This command becomes the one executed when a directive typed on the keyboard is not an existing PAW command.
Deactivate	The command is deactivated.

Note that the command name is displayed in the menu title.

Deactivated PAW commands

Double click with the left mouse button on this icon, execute the help on corresponding PAW command.

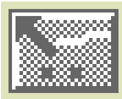
Select a **Deactivated PAW commands** icon with the left mouse button and press the right mouse button to obtain the following menu:



Help	Display the help on the command.
Activate	The command is activated.

Note that the deactivated command name is displayed in the menu title.

Up

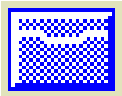


Double click with the left mouse button on this icon, allow to go one level up in the directory tree. This icon is alway the first one of the **content window**.

Select a **Up** icon with the left mouse button and press the right mouse button to obtain the following menu:

List Allow to go one level up in the directory tree.

Directory

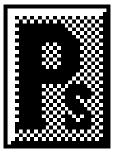


Double click with the left mouse button on this icon, change the current working directory.

Select a **Directory** icon with the left mouse button and press the right mouse button to obtain the following menu:

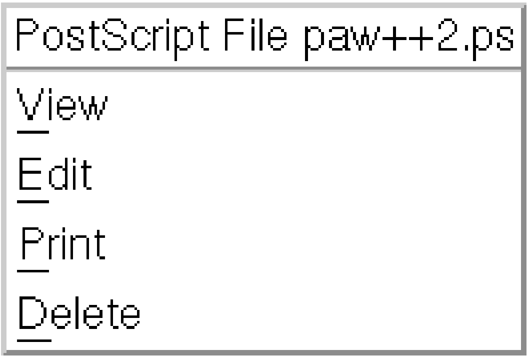
List Change the current working directory.

PostScript files



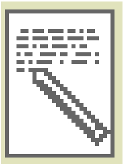
Double click with the left mouse button on this icon, invoke the ghostview on the corresponding file.

Select a **PostScript files** icon with the left mouse button and press the right mouse button to obtain the following menu:



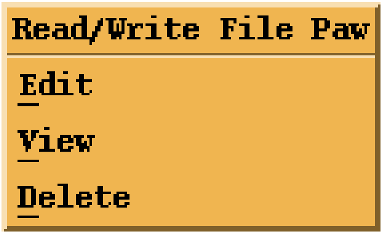
View	Invoke GhostView on the file.
Edit	Edit the file.
Print	Print the file.
Delete	Delete the file.

Read-Write files



Double click with the left mouse button on this icon, invoke the editor on the corresponding file.

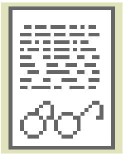
Select a **Read-Write files** icon with the left mouse button and press the right mouse button to obtain the following menu:



Edit	Edit the file.
View	Read the file.
Delete	Delete the file.

Note that the file name is displayed in the menu title.

Read-only files



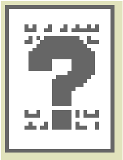
Double click with the left mouse button on this icon, invoke the editor in view mode on the corresponding file.

Select a **Read-only files** icon with the left mouse button and press the right mouse button to obtain the following menu:

View	Read the file.
Delete	Delete the file.

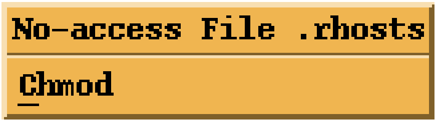
Note that the file name is displayed in the menu title.

No-access files



Double click with the left mouse button on this icon, invoke the shell command `chmod` on the corresponding file.

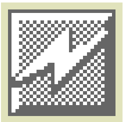
Select a **No-access files** icon with the left mouse button and press the right mouse button to obtain the following menu:



Chmod Try to change the permissions of the file.

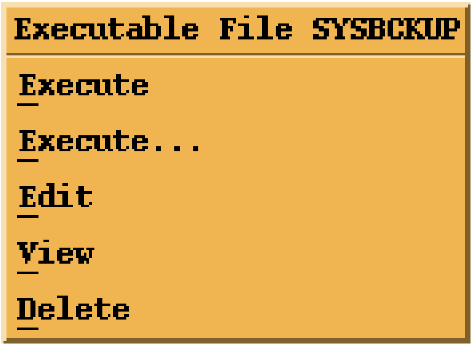
Note that the file name is displayed in the menu title.

Executable files



Double click with the left mouse button on this icon, invoke the command `SHELL` on the corresponding file.

Select a **Executable files** icon with the left mouse button and press the right mouse button to obtain the following menu:



Execute Invoke the command `SHELL` on the file.

Execute... Open the command panel `SHELL` with the file name.

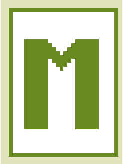
Edit Edit the file.

View Read the file.

Delete Delete the file.

Note that the file name is displayed in the menu title.

PAW **Macros**



Double click with the left mouse button on this icon, execute the corresponding macro.

Select a PAW **Macros** icon with the left mouse button and press the right mouse button to obtain the following menu:

Exec Execute the macro.

Exec... Open the command panel `EXEC` with the macro name. It is useful to give parameters to the macro.

Edit Edit the macro.

View Read the macro.

Delete Delete the macro.

Note that the macro name is displayed in the menu title.

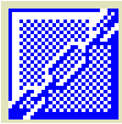
Pictures

Double click with the left mouse button on this icon, plot the corresponding picture.

Select a **Pictures** icon with the left mouse button and press the right mouse button to obtain the following menu:

Plot	Plot the highlighted picture.
Do PostScript	Produce the PostScript file `PNAME.ps`, where `PNAME` is the name of the highlighted picture.
Create	Create a new picture. The command panel `Picture/Create` is automatically invoked.
Rename	Rename the highlighted picture. The command panel `Picture/Rename` is automatically invoked.
Delete	Rename the highlighted picture.

Chains

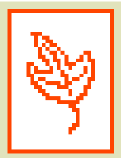


Double click with the left mouse button on this icon, allow to go one level deeper in the chain tree.

Select a **Chains** icon with the left mouse button and press the right mouse button to obtain the following menu:

List	List the available chains.
Show Tree	Show the tree from the highlighted chain.
Delete Chain	Delete the highlighted chain.

Last chain level

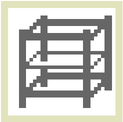


Last chain element.

Select a **Last chain level** icon with the left mouse button and press the right mouse button to obtain the following menu:

List	List the available chains.
Delete Chain Entry	Delete the highlighted chain element.

ZEBRA Stores

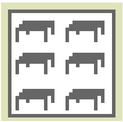


Double click with the left mouse button on this icon, allow to go inside the corresponding ZEBRA store.

Select a **ZEBRA Stores** icon with the left mouse button and press the right mouse button to obtain the following menu:

List	Display divisions of the store
Show store DZSTOR	Show parameters of the store (CALL DZSTOR)

ZEBRA Divisions

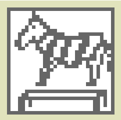


Double click with the left mouse button on this icon, allow to go inside the corresponding ZEBRA division.

Select a **ZEBRA Divisions** icon with the left mouse button and press the right mouse button to obtain the following menu:

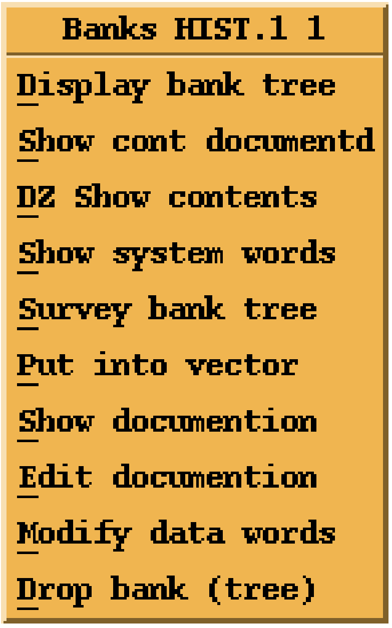
List	Display banks of the division as icons.
Display division	Show layout of banks in divisions graphically.
Snap division	Show a snapshot of division parameters. (CALL DZSNAP).
Verify division	Verify division (CALL DZVERI).
Collect garbage	CALL MZGARB in selected division.
Set filter for banks	Allow to display only banks whose hollerith. identifiers match a wild card selection.

ZEBRA Banks



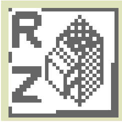
Double click with the left mouse button on this icon, draw the bank tree from the corresponding ZEBRA bank.

Select a **ZEBRA Banks** icon with the left mouse button and press the right mouse button to obtain the following menu:



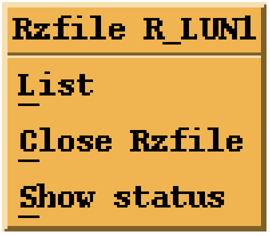
Display bank tree	Display graphically the structure below the selected bank (see picture banktree.eps).
Show cont documented	Display the data of the bank with their description if a documentation data base is provided (see CERN Q101).
DZ Show contents	CALL DZSHOW fore selected bank.
Show system words	List contents of the links and system words.
Survey bank tree	CALL DZSURV for selected bank
Put into vector	Put data contents of the bank into a KUIP vector.
Show documentation	Display the documentation for the bank (if provided).
Edit documentation	Edit a bank descriptor, if no available yet provide a template.
Modify data words	Self explaining.
Drop bank (tree)	Self explaining.

RZ **Files**



Double click with the left mouse button on this icon, allow to go inside the corresponding ZEBRA/RZ file.

Select a RZ **Files** icon with the left mouse button and press the right mouse button to obtain the following menu:

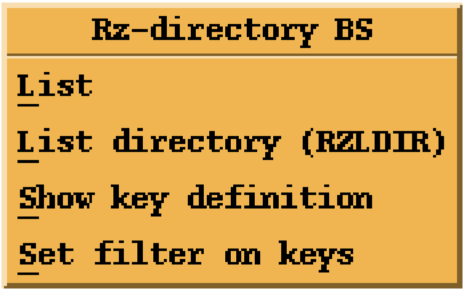


Close RZfile	Self explaining.
List	Display keys.
List directory	CALL RZLDIR.
Show key definition	self explaining.
Set filter on keys	Allow to display only entries whose key words match a wild card selection.
Show status	CALL RZSTAT.

RZ **Directories**

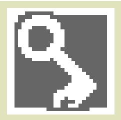
Double click with the left mouse button on this icon, allow to go inside the corresponding ZEBRA/RZ directory.

Select a RZ **Directories** icon with the left mouse button and press the right mouse button to obtain the following menu:



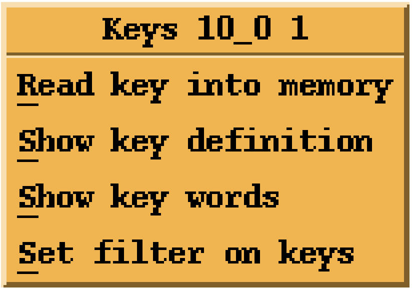
List	List the highlighted RZ directory.
List directory (RZLDIR)	Perform RZLDIR on the highlighted RZ directory.
Show key definition	Display the key definition.
Set filter on keys	Defines a filter on the keys.

RZ **Keys**



Double click with the left mouse button on this icon, allow to read into memory the corresponding ZEBRA/RZ key.

Select a RZ **Keys** icon with the left mouse button and press the right mouse button to obtain the following menu:

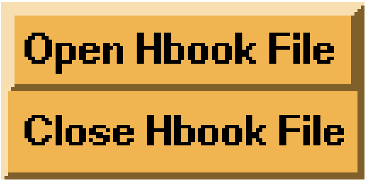


Read key into memory	Allow to inspect the data of a key.
Show key definition	Self explaining.
Show key words	Self explaining.
Set filter on keys	See above.

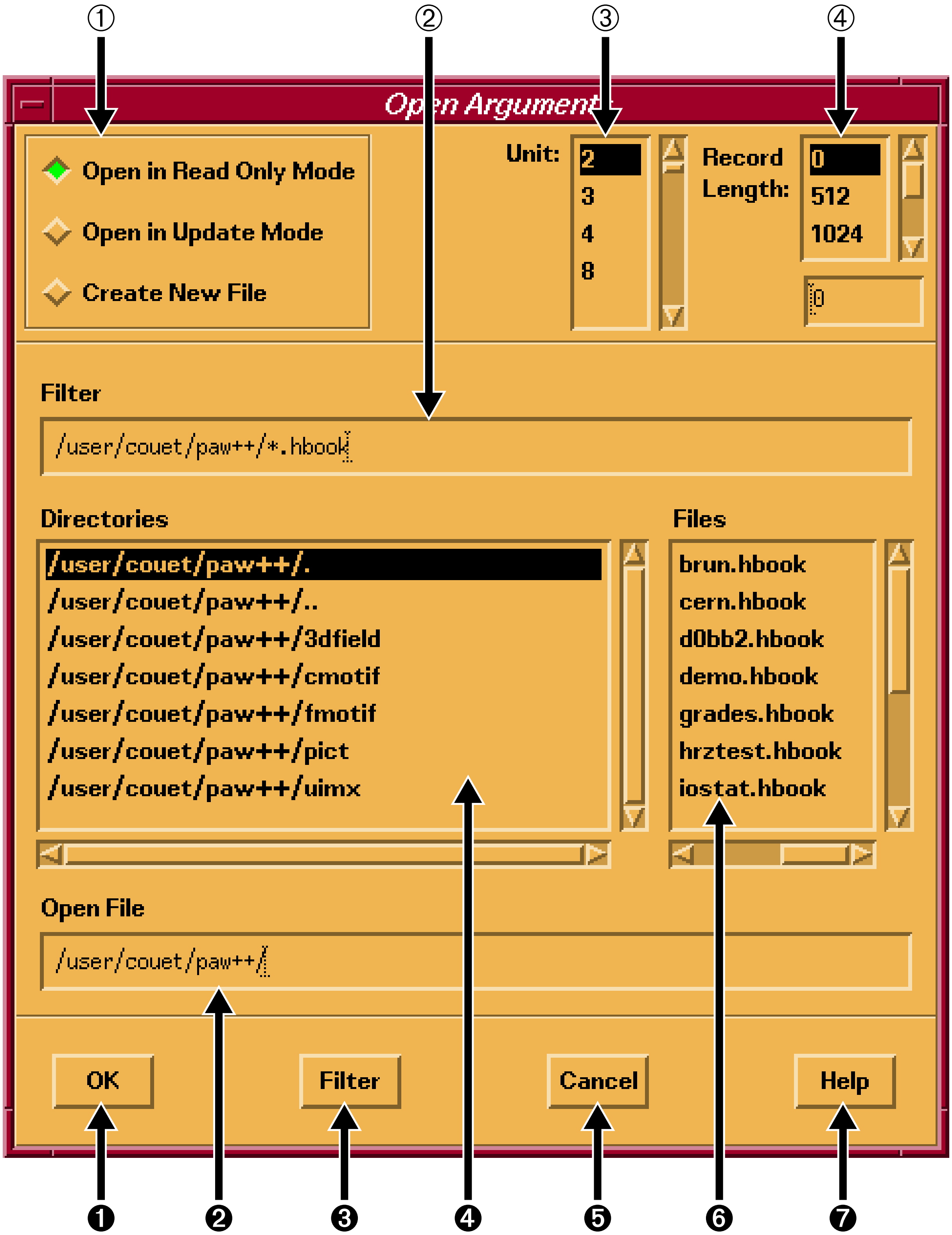
1.3.2 The Main Browser Menu Bar

In this section, is describe the full functionality of the pull down menu available in the Menu Bar of the **Main Browser**.

File



Open Hbook file	Display the **Open Arguments** panel (see after).
Close Hbook file	Display the **Close Arguments** panel (see after).

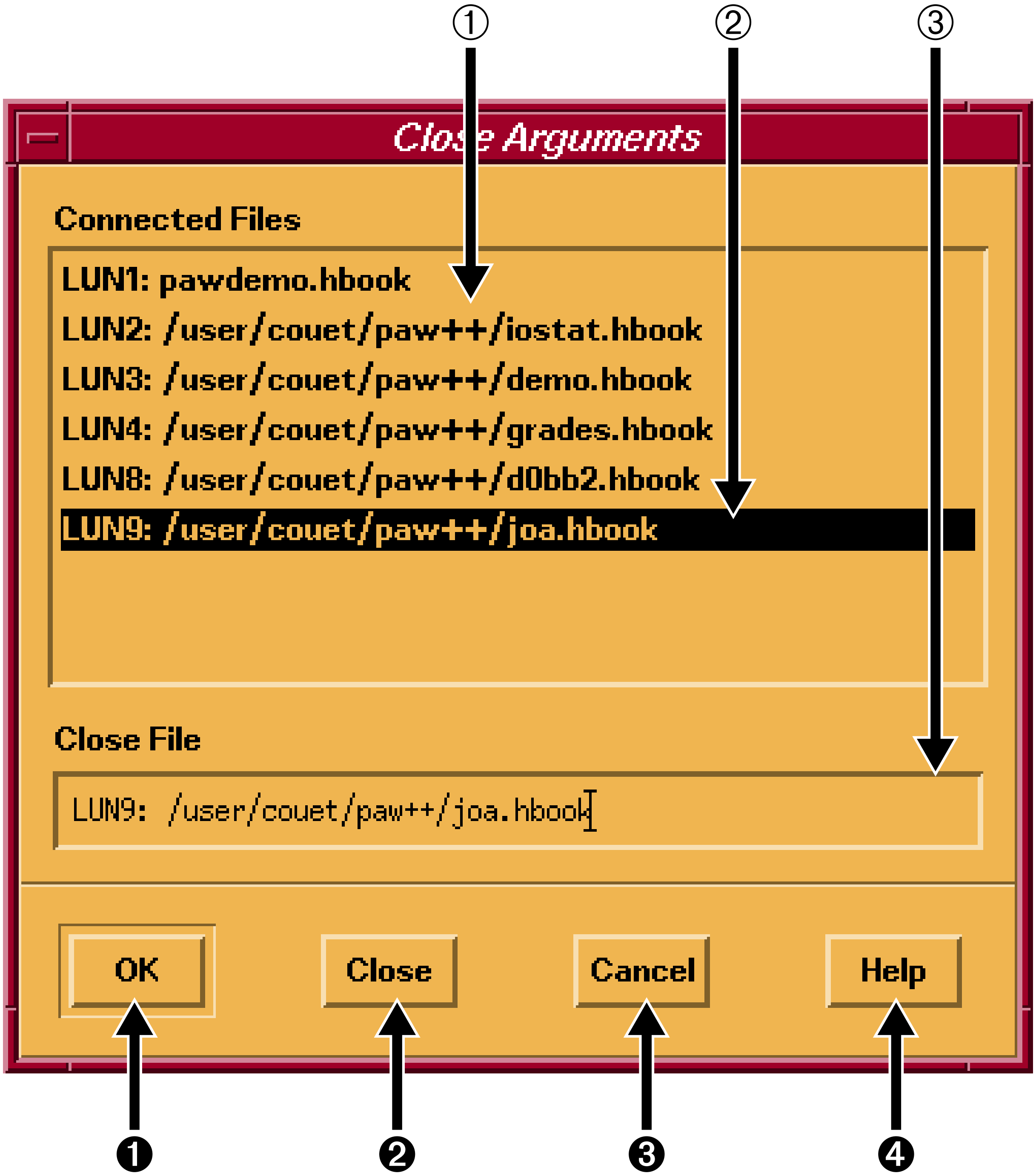


① Toggle buttons to choose the openning mode.
② Filter apply on the file list ❻.

③ Possible logical units. Only the free units are displayed. The next free unit is highlighted. Any other unit is invalid.
④ Possible record length. A record length of `0` means that the system will compute the correct one automatically.

❶ The file is open and this panel is closed.
❷ File name of the opened file.
❸ Apply the filter defined in ②.
❹ List of the subdirectories available. Double click on a directory name change the current directory.
❺ Cancel the current opened panel and clode it.
❻ List of the file in the current directory matching the filter.
❼ Help

Note that a double click with the left mouse button on a HBOOK file icon in the object window of the **Main Browser** open also the HBOOK file. This panel is usefull to specify a filter different form the default filter `*.hbook` used in the object window.



① List of the currently connected hbook files.

② A simple click with the left mouse button a file name in the connected files list, highlight the file-name and put it in the **Close file** field ③.

③ Name of the file to be closed. This field can be filled directly by tipyng on the keyboard, or by a simple click with the left mouse button in the **Connected Files** list ①.

❶ When a file is selected, clicking on this button or typing <CR> allows to perform the action (close the file) and close the panel.
❷ Close the selcted file and leave the panel opened.
❸ Cancel the current operation and close the panel.
❹ Give some help.

View

This pull down menu allows to define the "viewing" for the objects in the "object window" of the **Main Browser**.

Icons The objects are represented with big icons (default).

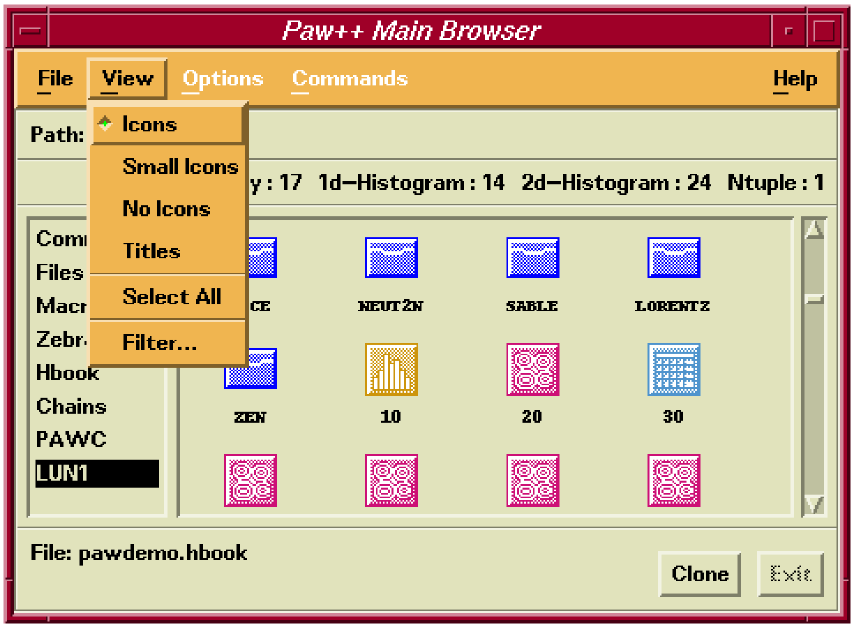
Small Icons The objects are represented with small icons.

No Icons Only the object identifier and type are displayed.

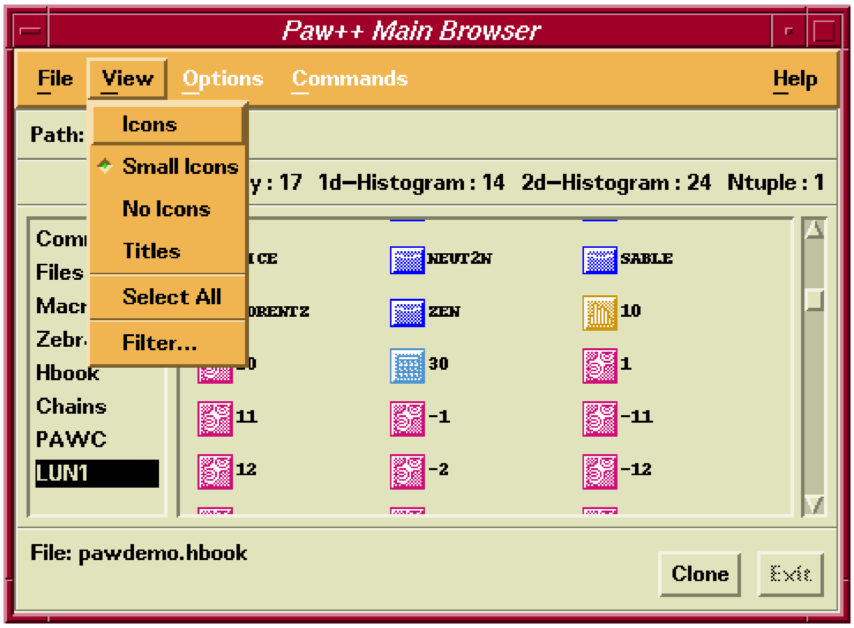
Titles Small icons, objects identifiers and titles are displayed.

Select All All the objects are selected.

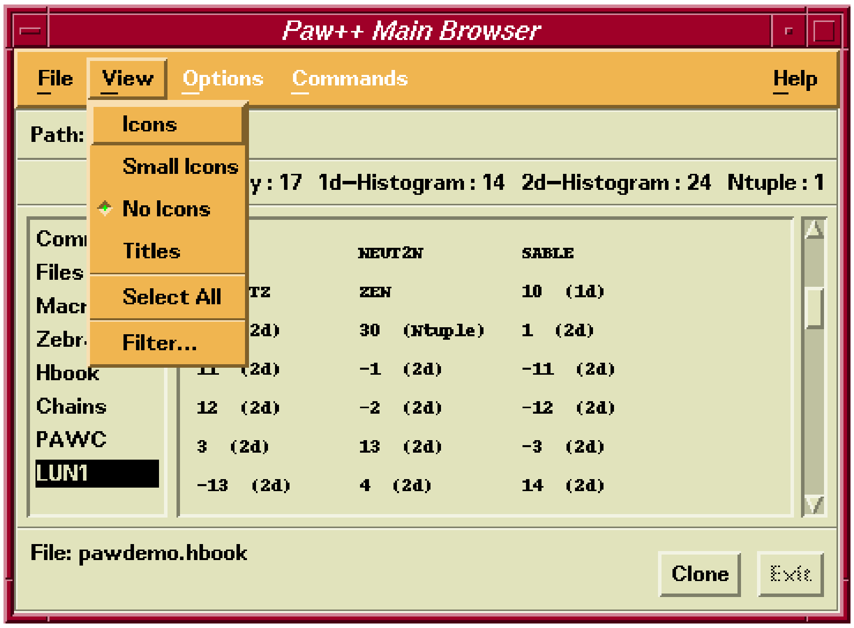
Filter... Apply a filter on object names.



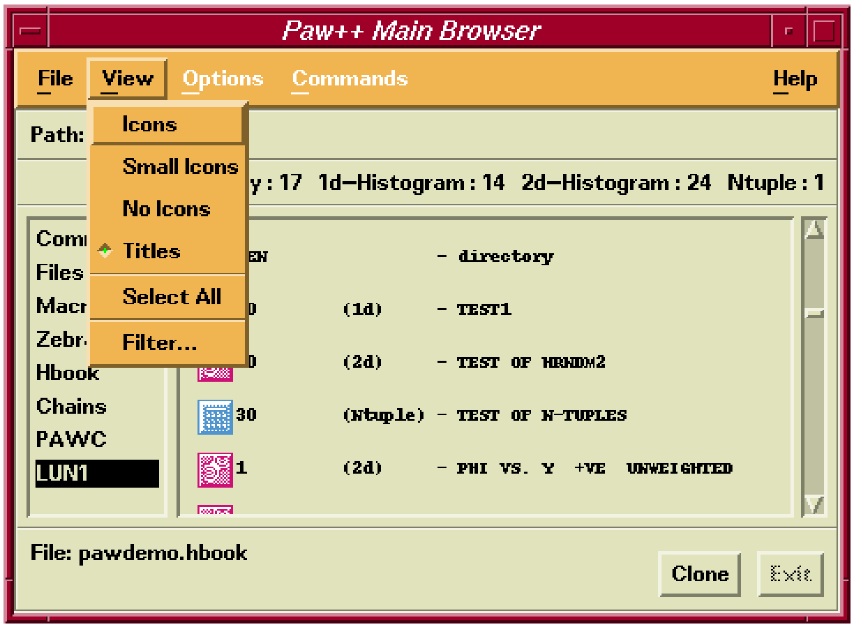
Icons: icons and the object identifiers are displayed.



Small Icons: small icons and the object identifiers are displayed.



No Icons : object identifiers and titles are displayed.



Titles : small icons and the object identifiers and titles are displayed.

Options

Raise Window Raise a given window.

Command Argument Panel... Get help on a given command.

Commands

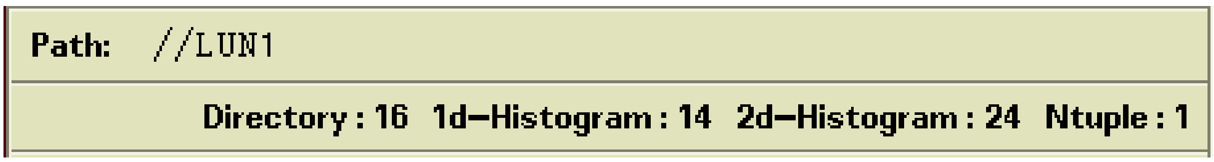
This menu allows to access the tree of the PAW commands. Only the top levels are describe in this section. Note the tree of the PAW commands can also be accessed via the item “Commands” in the “PATH Window” of the **Main Browser**.

Kuip	Command Processor commands.
Macro	Macro Processor commands.
Vector	Vector Processor commands.
Histogram	Manipulation of histograms, Ntuples.
Function	Operations with Functions. Creation and plotting.
Ntuple	Ntuple creation and related operations.
Graphics	Interface to the graphics packages HPLOT and HIGZ.
Picture	Creation and manipulation of HIGZ pictures.
Fortran	Interface to MINUIT, COMIS, SIGMA and FORTRAN Input/Output.
Network	To access files on remote computers.
Dzdoc	Access Dzdoc

Help

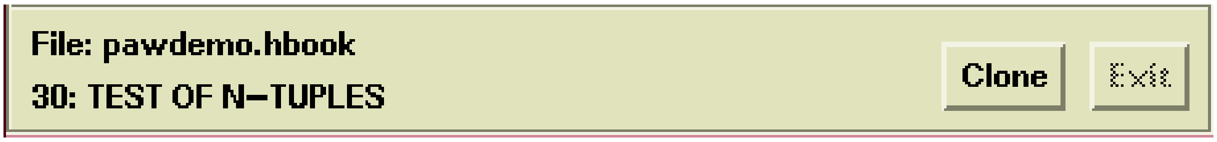
1.3.3 Information Windows

Top



On the top of the **Main Browser** is displayed the current directory PATH and the content of the current directory i.e. the number of objects of each type.

Bottom

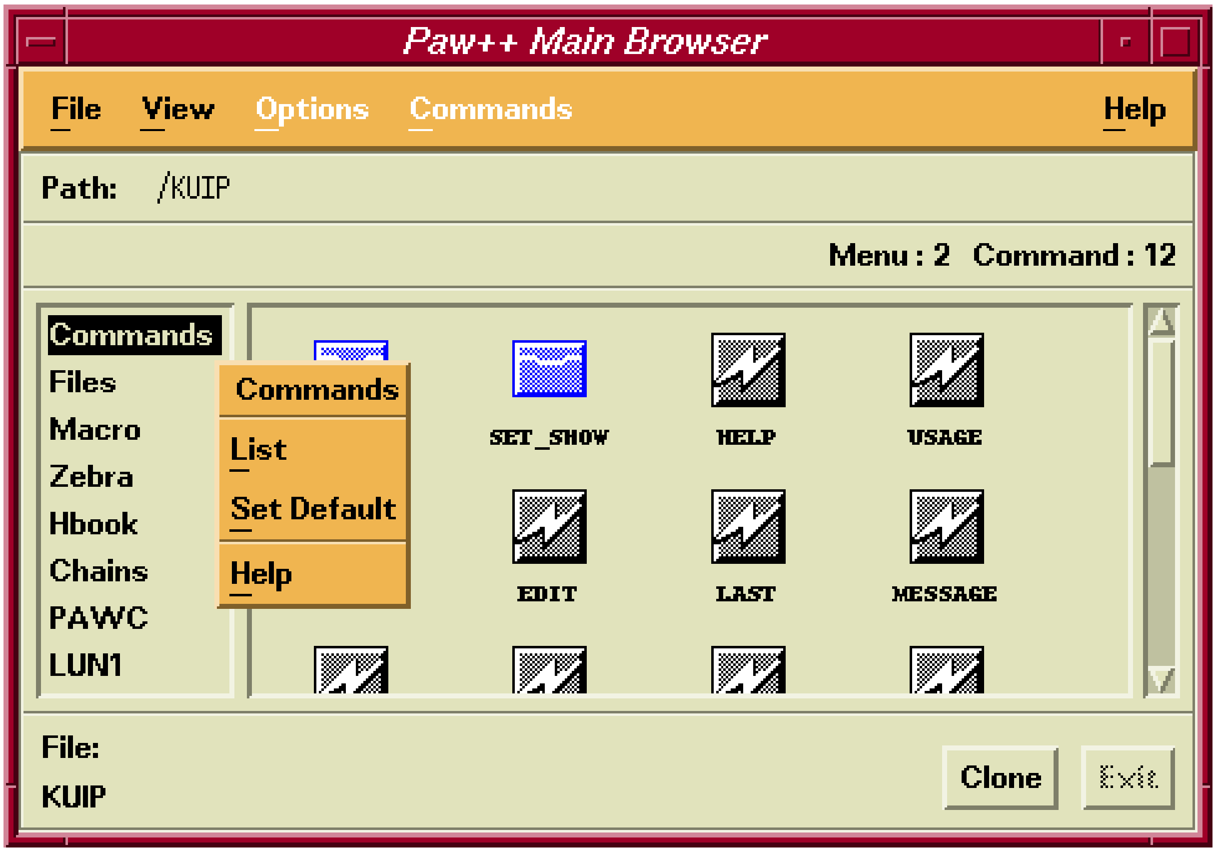


On the bottom of the **Main Browser** is displayed the name of the current file (HBOOK files for example) in which the objects are stored. If the objects are not stored in a file (like the commands), the file name is just blank. Below the file name, the full name of the currently selected object is displayed.

1.3.4 Content Window

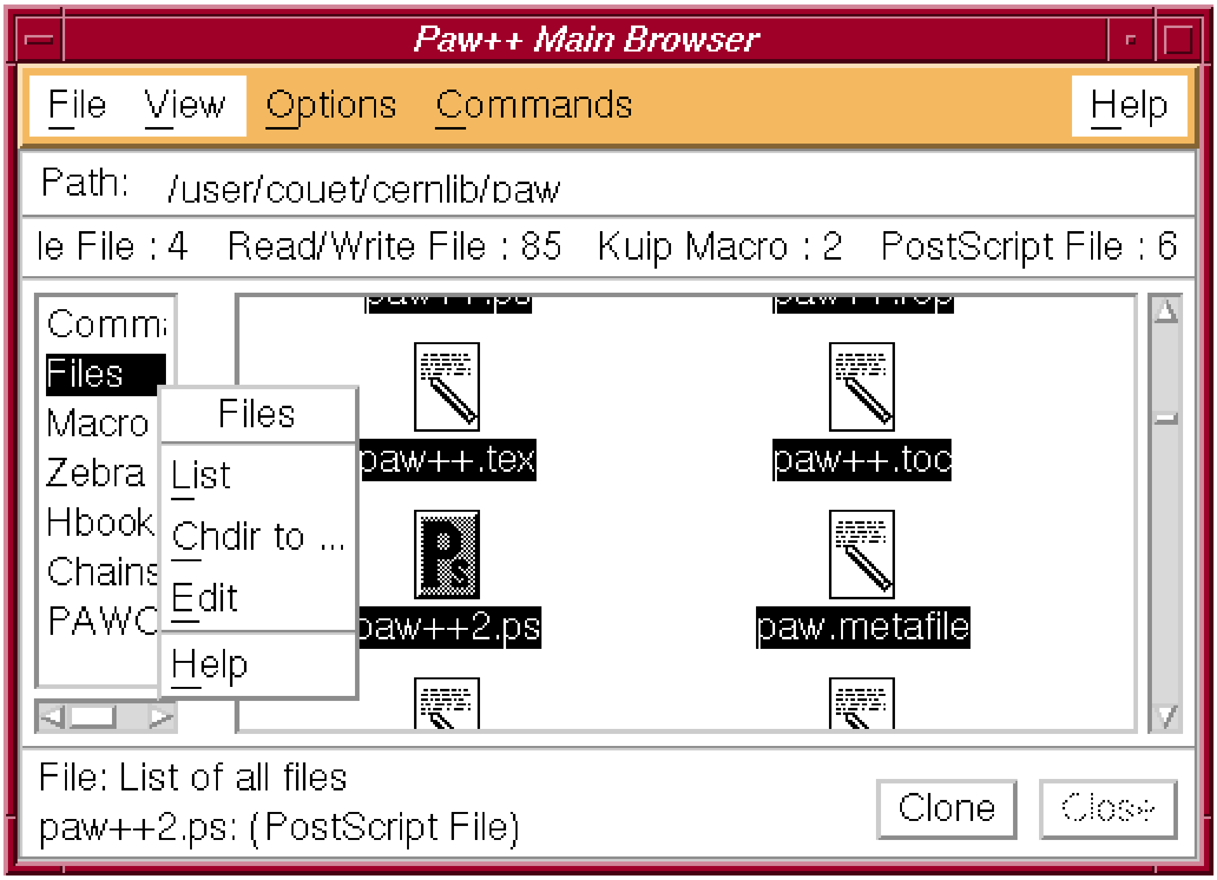
In this section are describe the different menu available in the "Content Window".

Commands



List	List the content of the current menu.
Set Default	Set the root for searching commands to /.
Help	Display some help.

Files



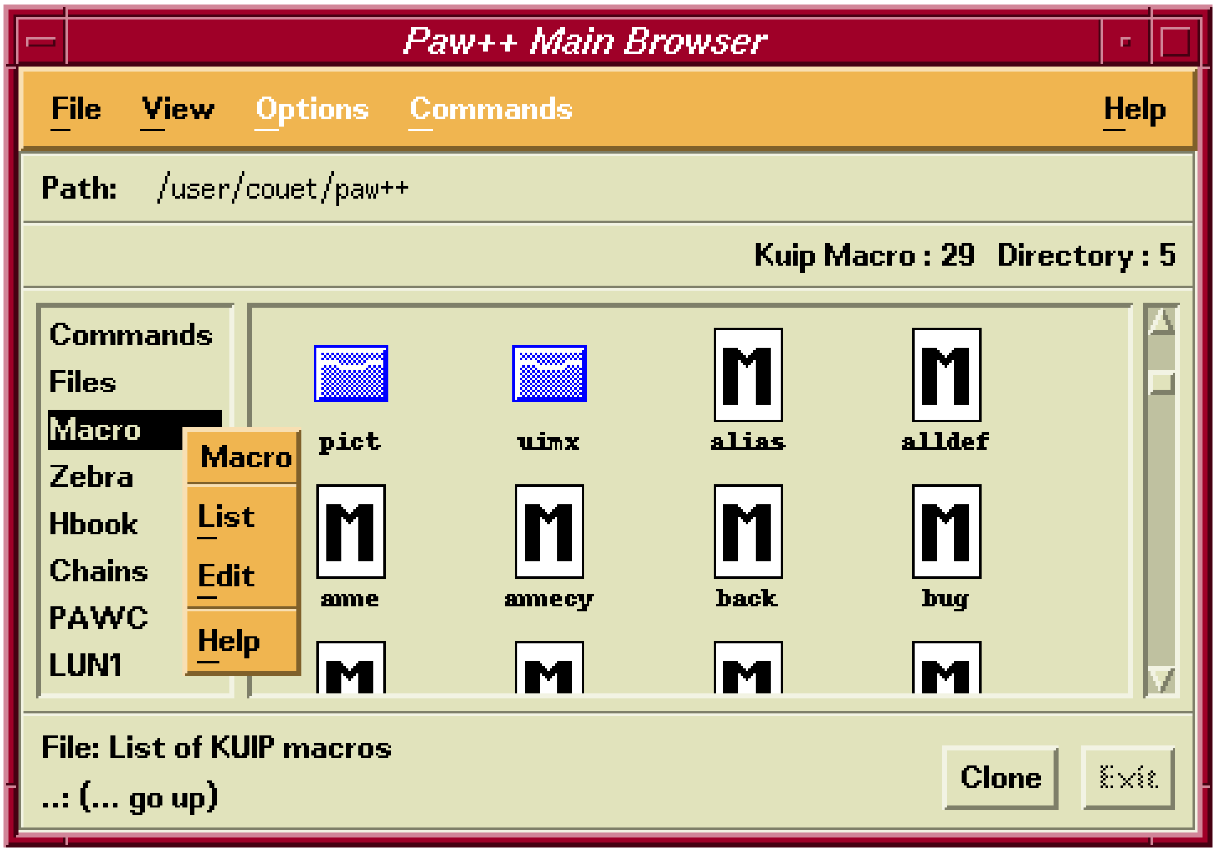
List List the content of the current working directory (OS).

Chdir to ... Change directory.

Edit Edit a file.

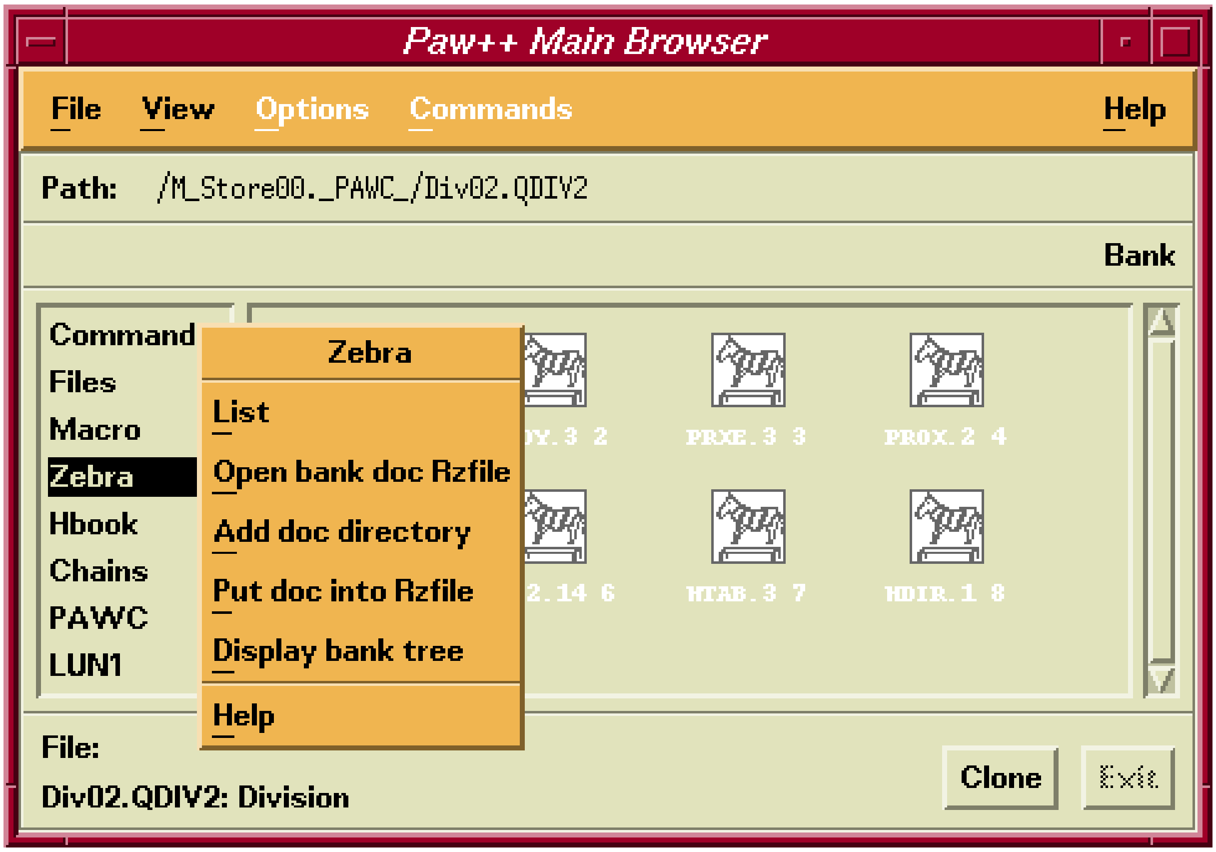
Help Display some help.

Macro



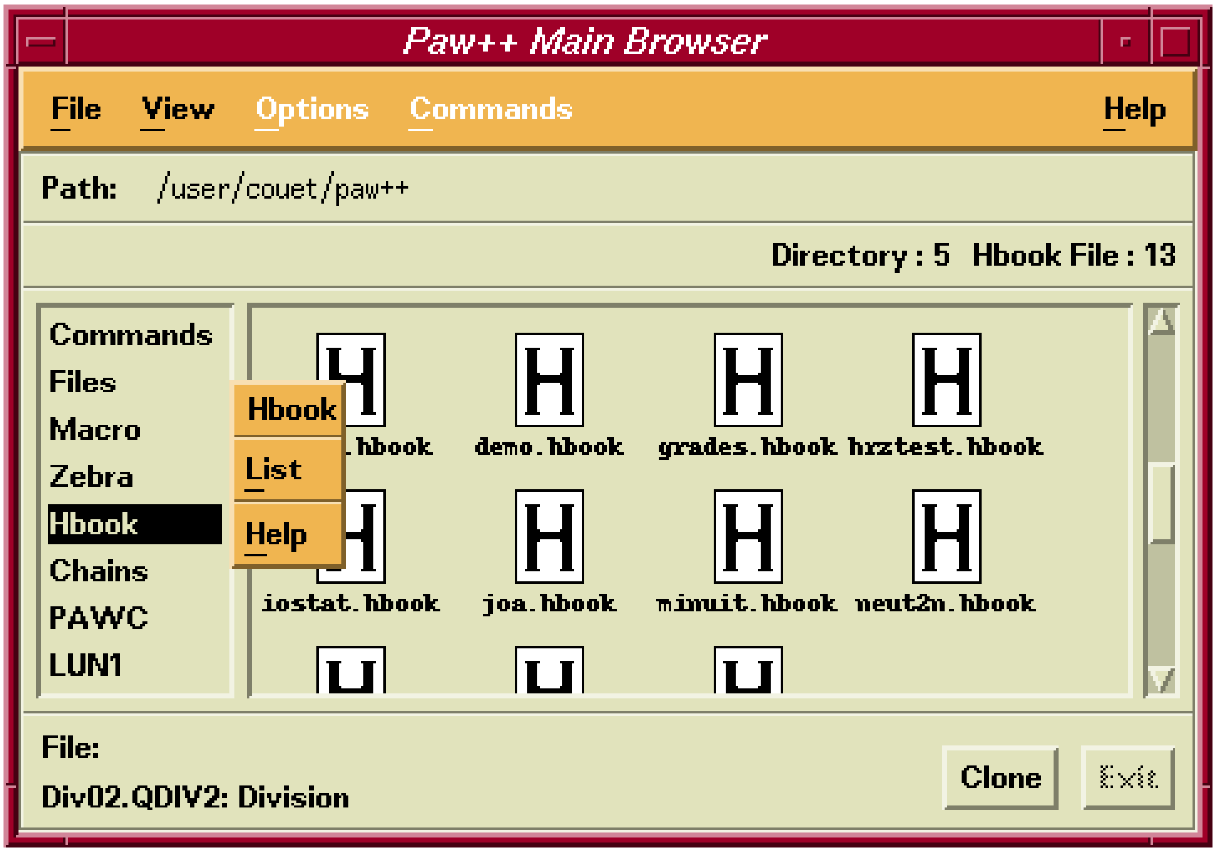
List	List all the macros in the current working directory.
Edit	Edit a macro.
Help	Display some help.

Zebra



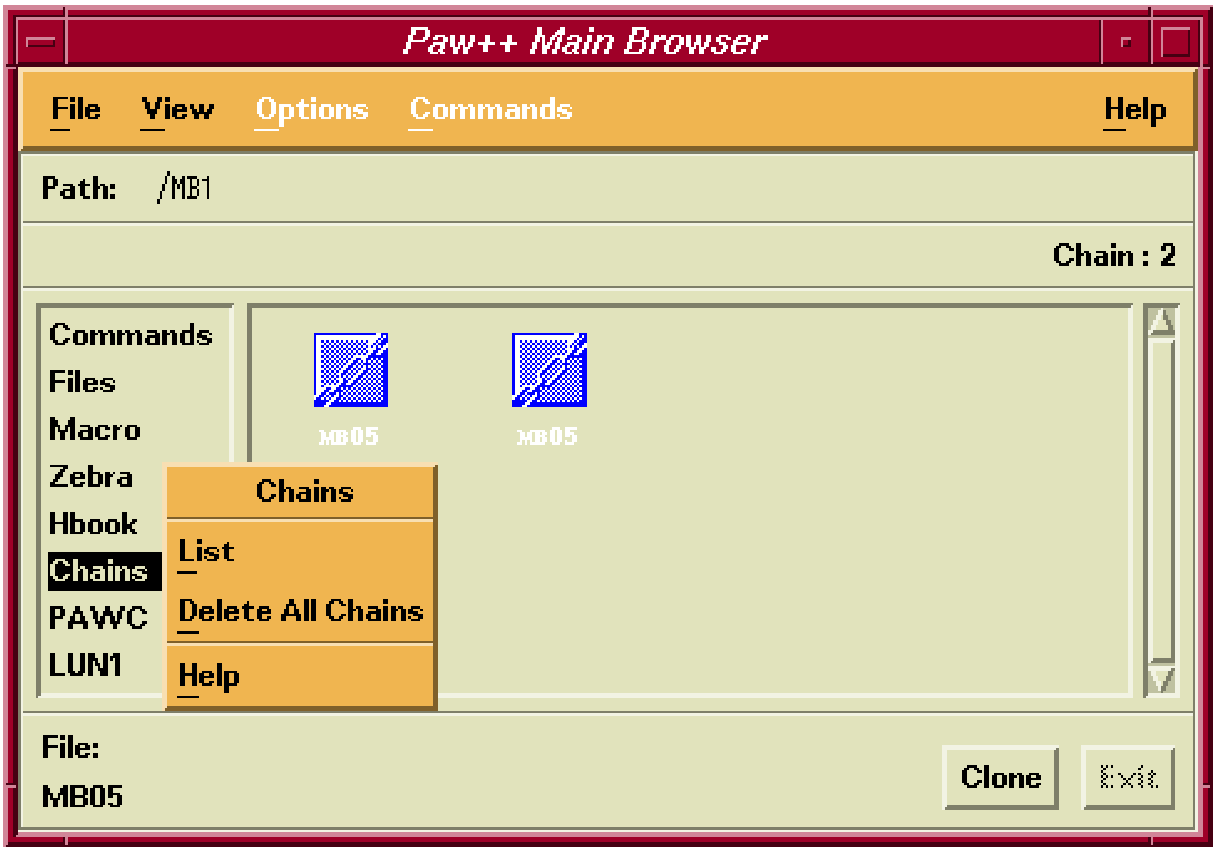
List	List the ZEBRA file connected.
Open bank doc Rzfile	Open bank doc Rzfile.
Add doc directory	Add doc directory.
Put doc into Rzfile	Put doc into Rzfile.
Display bank tree	Display bank tree.
Help	Display some help.

Hbook

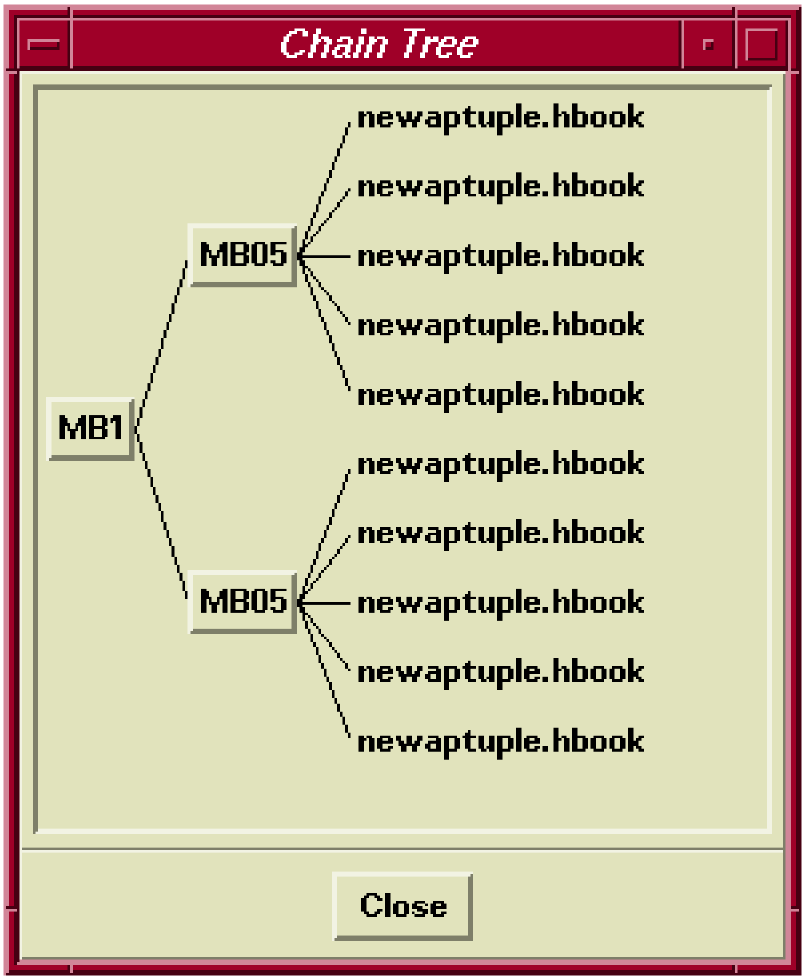


List	List all the HBOOK files in the current working directory.
Help	Display some help.

Chains

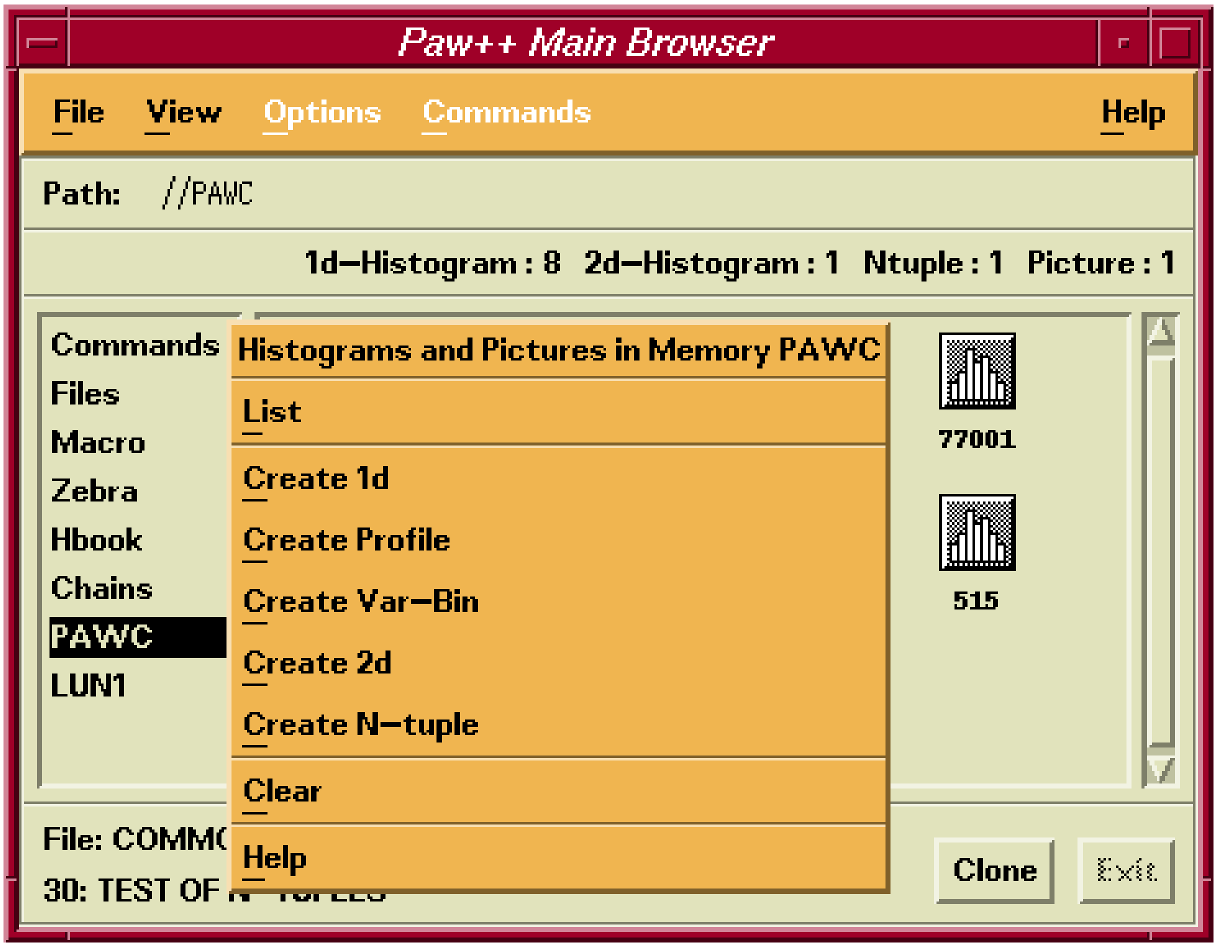


List	List the chains currently in memory.
Delete All Chains	Delete all the chains from memory.
Help	Display some help.



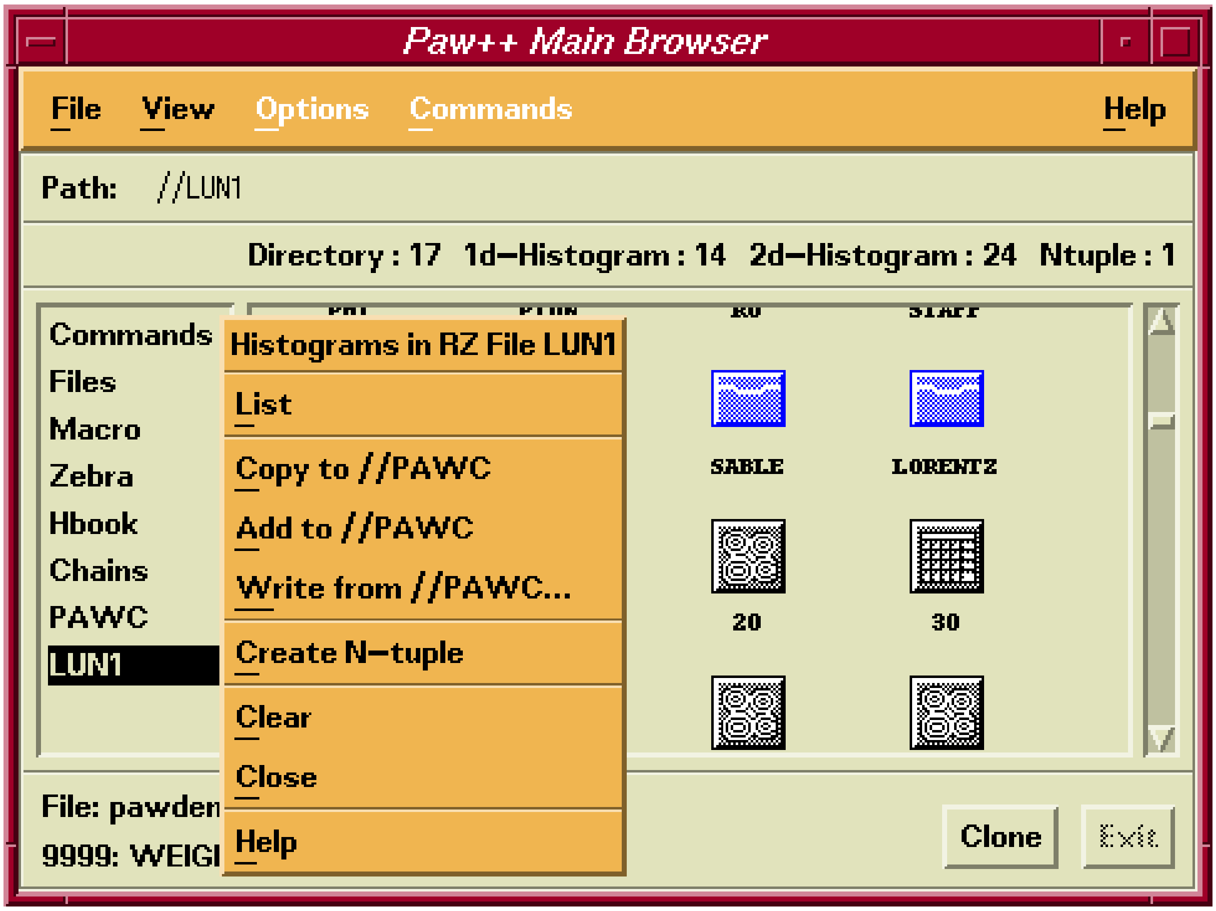
This panel allows to navigate in the chain tree. Just clicking on a chain name change the level from which the chain will be traversed.

PAWC



List	List all the HBOOK objects in memory.
Create 1d	Create a 1d histogram.
Create Profile	Create a Profile histogram.
Create Var-Bin	Create a variable bin size histogram.
Create 2d	Create a 2d histogram.
Create N-tuple	Create a row wise Ntuple histogram.
Clear	Delete histograms from memory.
Help	Provide some help.

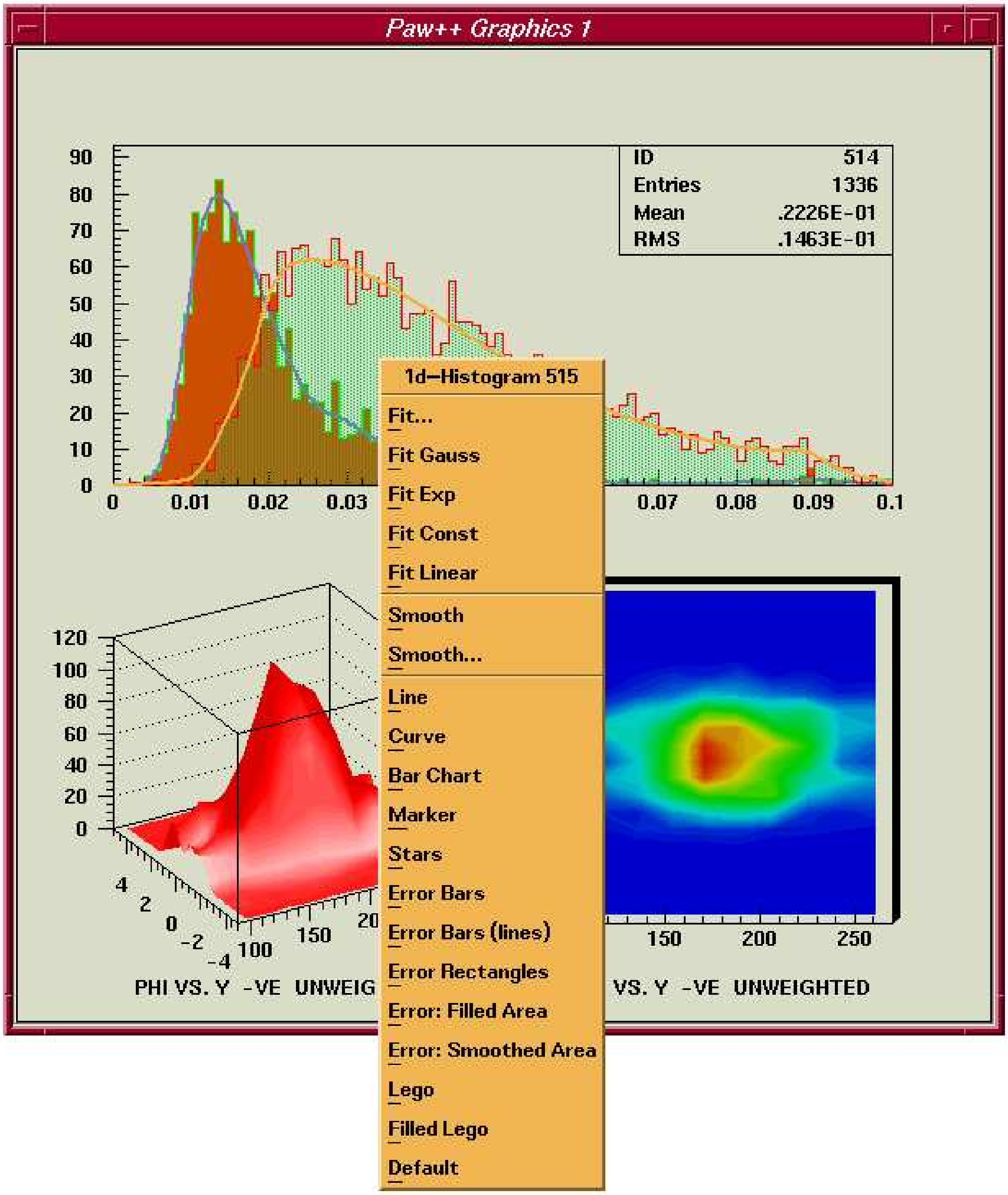
Hbook Files (//LUNn)



List	List all the HBOOK objects in this file.
Copy to //PAWC	Copy the highlighted HBOOK object in memory.
Add to //PAWC	Add the highlighted HBOOK object in memory.
Write from //PAWC...	Save the highlighted HBOOK object on disk.
Create N-tuple	Create a row wise Ntuple histogram.
Clear	Delete histograms from disk.
Close	Close the selected hbook file
Help	Provide some help.

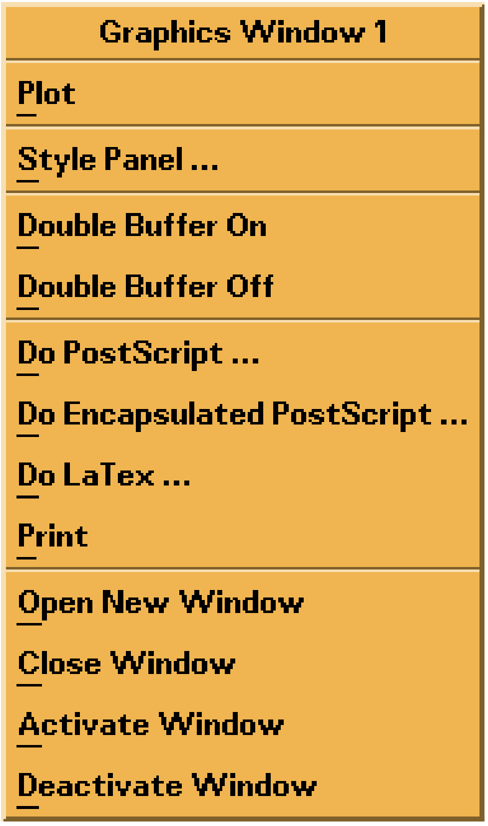
1.4 Graphics

PAW++ allows direct graphics manipulation of the objects like Histograms or Ntuples. To perform actions on object from the **Graphics Window**, it is enough to move the mouse cursor on the **Graphics Window** and to click with the right mouse button on the object. A pull down menu will be displayed according to the object picked. In this section are described the different menus available in the **Graphics Window**.



1.4.1 The Graphics Window

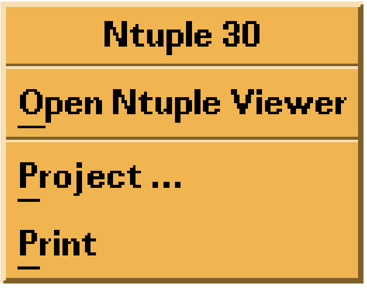
When no object is picked in the **Graphics Window** for instance when the background of the window is picked the following menu is displayed.



Plot	PLot the current picture.
Style Panel...	Invoke the **Histogram Style Panel**.
Double Buffer On	Set the double buffer on.
Double Buffer Off	Set the double buffer off.
Do PostScript...	Generate the Postscipt file `paw.ps`.
Do Encapsulated PostScript...	Generate the Encapsulated Postscipt file `paw.eps`.
Do LaTex...	Generate the LaTex file `paw.tex`.
Print	Print the current picture.
Open New Window	Open a new window.
Close Window	Close the current window.
Activate Window	Activate the current window.
Deactivate Window	Deactivate the current window.

1.4.2 Ntuple

When a Ntuple is picked in **Graphics Window** with the right mouse button, the following menu is displayed:



Open Ntuple Viewer	Open the Ntuple browser.
Project...	Project the picked ntuple.
Print	Print the picked ntuple

1.4.3 1D-Histogram

When a 1D-Histogram is picked in **Graphics Window** with the right mouse button, the following menu is displayed:

Fit Command... Invoke the fit command.

Fitting panel... Invoke the fit panel.

Fit Gauss Perform a gaussian fit.

Fit Exp Perform a exponential fit.

Fit Const Fit with a constant.

Fit Linear Perform a linear fit.

Smooth Smooth.

Smooth... Invoke the smooth command.

Line Draw the histogram with a line.

Curve Draw the histogram with a curve.

Bar Chart Draw the histogram as a bar chart.

Marker Draw the histogram with markers.

Stars Draw the histogram with stars.

Error Bars Draw the histogram with error bars.

Error Bars (lines) Draw the histogram with error bars ended with tick marks.

Error Rectangles Draw the histogram with error rectangles.

Error: Filled Area Draw the histogram as a filled area.

Error: Smoothed Area Draw the histogram a a smoothed and filled area.

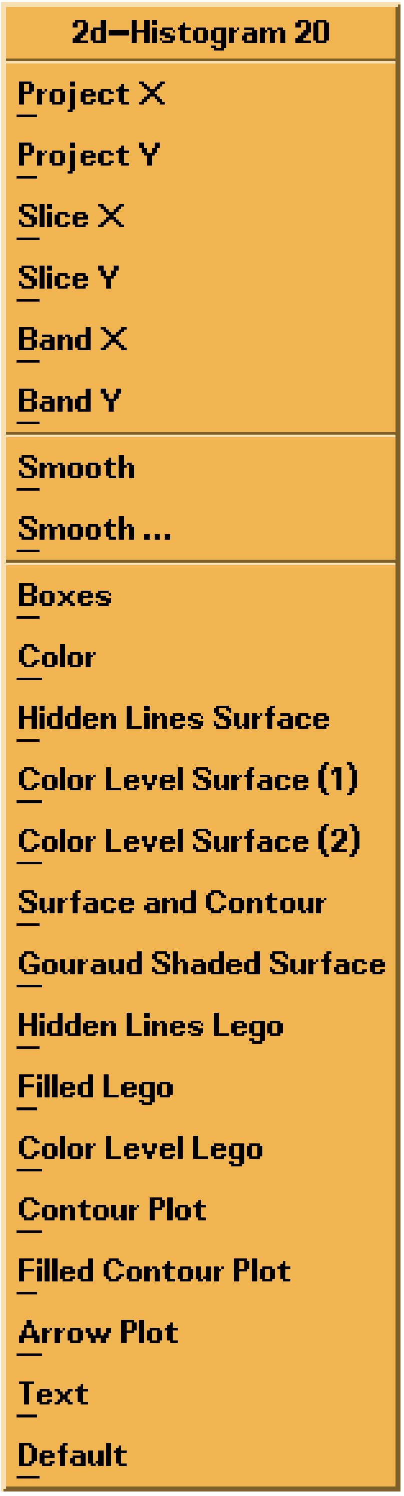
Lego Draw the histogram as a lego plot.

Filled Lego Draw the histogram as a filled lego plot.

Default Default histogram drawing.

1.4.4 2D-Histogram

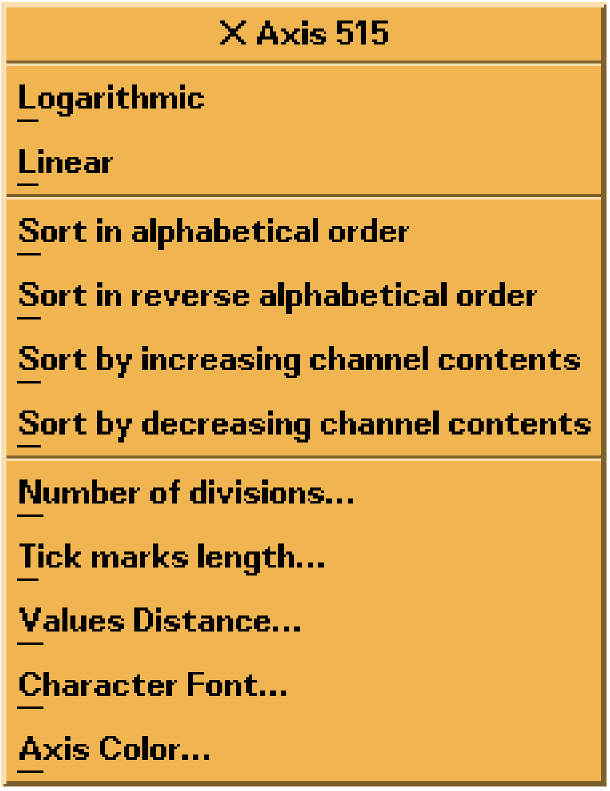
When a 2D-Histogram is picked in **Graphics Window** with the right mouse button, the following menu is displayed:



Project X	Fill the X projection and display it.
Project Y	Fill the Y projection and display it.
Slice X	Define slices on X and display slice 1.
Slice Y	Define slices on Y and display slice 1.
Band X	Define bands on X ans display band 1.
Band Y	Define bands on Y and display band 1.
Smooth	Smooth the picked histogram.
Smooth...	Display the smooth panel on the picked histogram.
Boxes	Boxes plot.
Color	Color plot
Hidden Lines Surface	Hidden lines surface plot.
Color Level Surface (1)	Color level surface plot (1).
Color Level Surface (2)	Color level surface plot (2).
Surface and Contour	Surface and contour plot.
Gouraud Shaded Surface	Gouraud shaded surface plot.
Hidden Lines Lego	Hidden lines lego plot.
Filled Lego	Filled lego plot.
Color Level Lego	Color level lego plot.
Contour Plot	Contour plot (line).
Filled Contour Plot	Filled contour plot.
Arrow Plot	Arrow plot.
Text	Text plot.
Default	Default (scatter plot or text plot).

1.4.5 X Axis

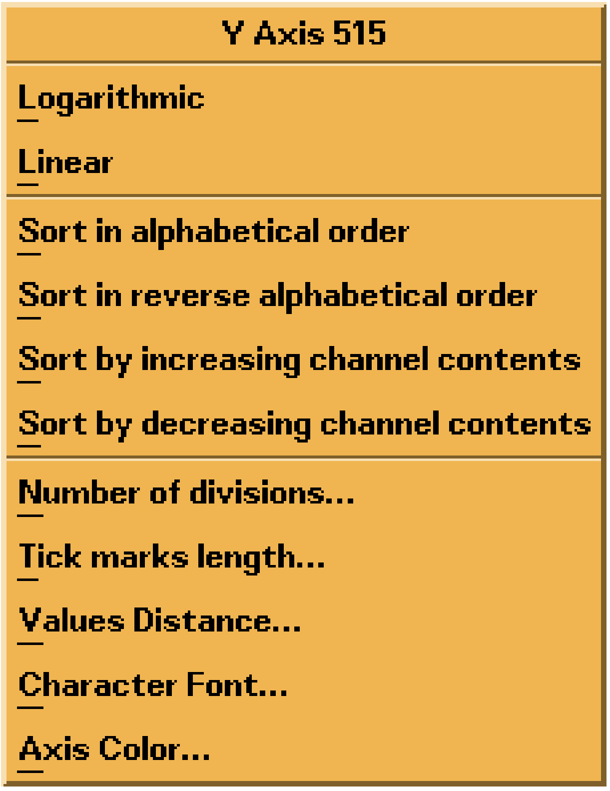
When a X-Axis is picked in **Graphics Window** with the right mouse button, the following menu is displayed:



Logarithmic	Log scale on.
Linear	Linear scale on.
Sort in alphabetical order	Reorder the bins.
Sort in reverse alphabetical order	Reorder the bins.
Sort by increasing channel contents	Reorder the bins.
Sort by decreasing channel contents	Reorder the bins.
Number of divisions...	Define number of X divisions.
Tick marks length...	Tick marks size.
Values Distance...	Labels distance.
Character Font...	Labels font.
Axis Color...	Axis color.

1.4.6 Y Axis

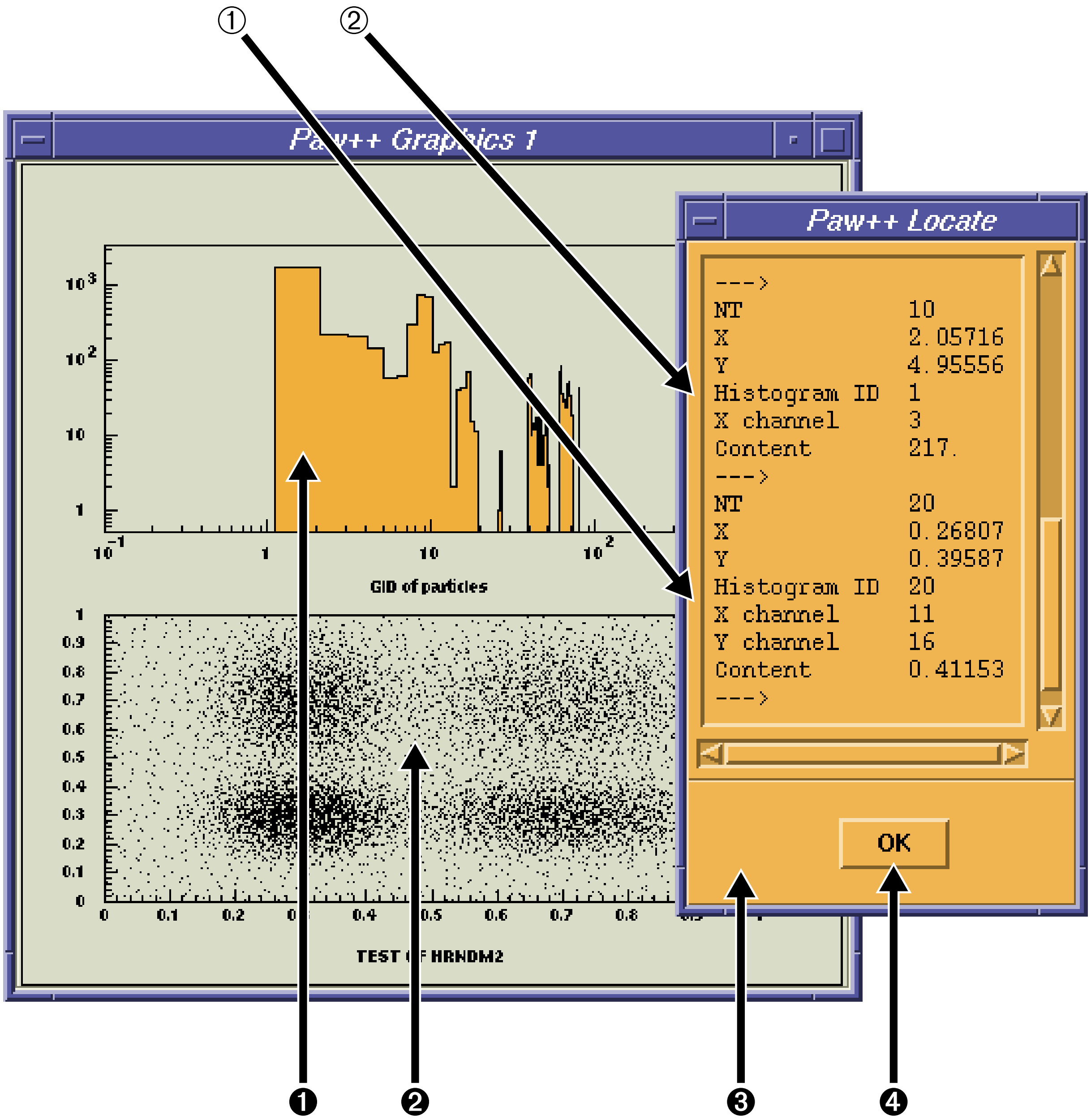
When a Y-Axis is picked in **Graphics Window** with the right mouse button, the following menu is displayed:



Logarithmic	Log scale on.
Linear	Linear scale on.
Sort in alphabetical order	Reorder the bins.
Sort in reverse alphabetical order	Reorder the bins.
Sort by increasing channel contents	Reorder the bins.
Sort by decreasing channel contents	Reorder the bins.
Number of divisions...	Define number of Y divisions.
Tick marks length...	Tick marks size.
Values Distance...	Labels distance.
Character Font...	Labels font.
Axis Color...	Axis color.

1.4.7 Locate on Histograms

To retrieve interactively on the **Graphics Window** an histogram identifier a bin number, a `(X,Y)` position etc... , place the mouse cursor on the graphics area and click with the left mouse button on the interesting region. The information about the picked histogram will appear in the window called **PAW++ Locate**.

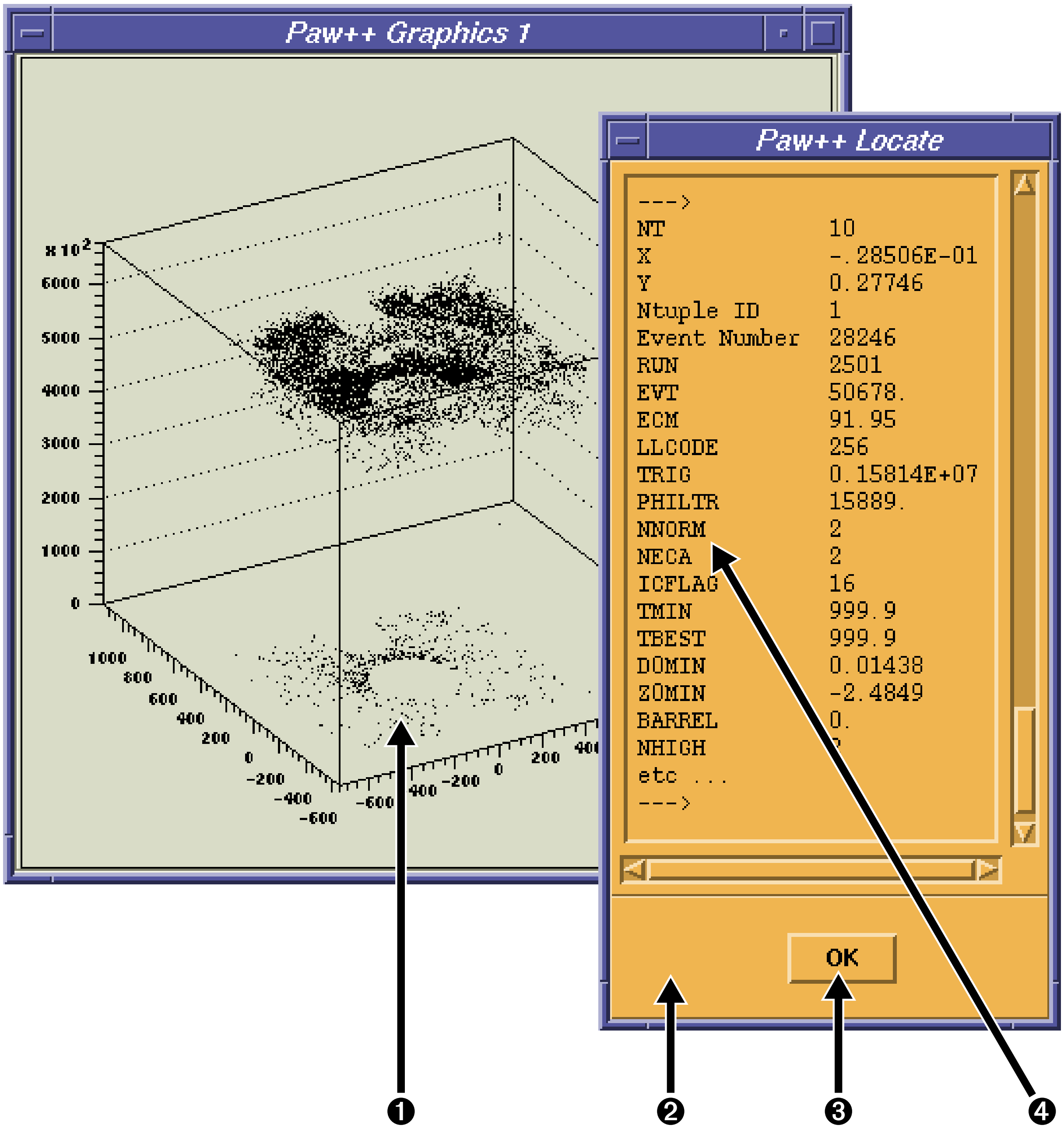


❶ 1D Histogram (with LOG scale).
❷ 2D Histogram.
❸ **PAW++ Locate** window.
❹ To release the Output window.

① Info the the 1D Histogram.
② Info the the 2D Histogram.

1.4.8 Locate on Ntuples

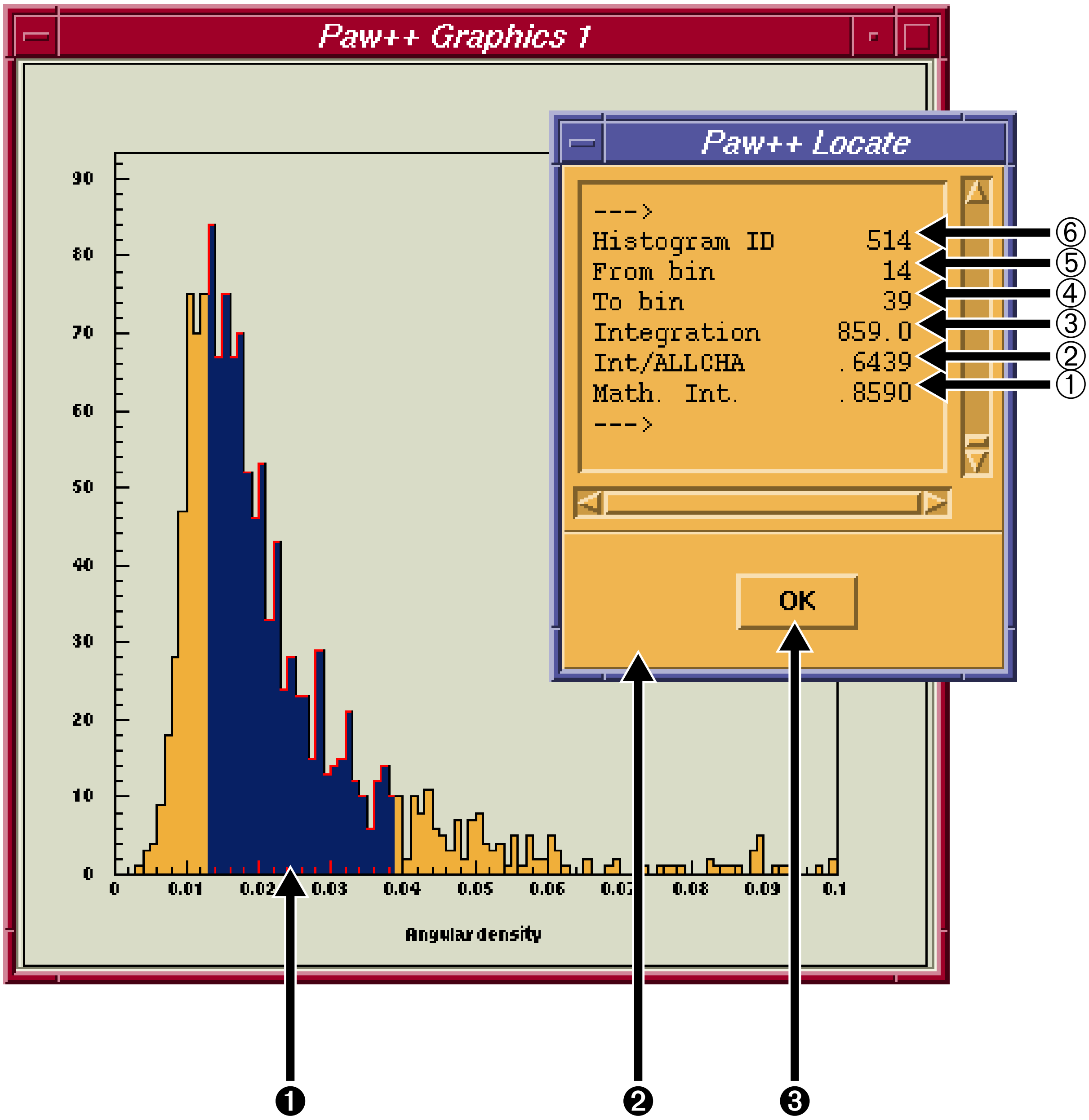
Just by clicking with the left mouse button on a Ntuple drawing, one can get the event description in the **PAW++ Locate** window. If the mouse cursor is moved on the Ntuple drawing with the left mouse button pressed, the event description will change in real time in **PAW++ Locate**.



❶ Ntuple drawing.
❷ **PAW++ Locate** window.
❸ To release the Output window.
❹ event description.

1.4.9 Integrate Histograms

To integrate interactively an histogram, place the mouse cursor on the bin from which the integration will start, and drag the cursor with the left mouse button pressed to the last bin. The result will appears in real time in a separated window called **PAW++ Locate** ❷.



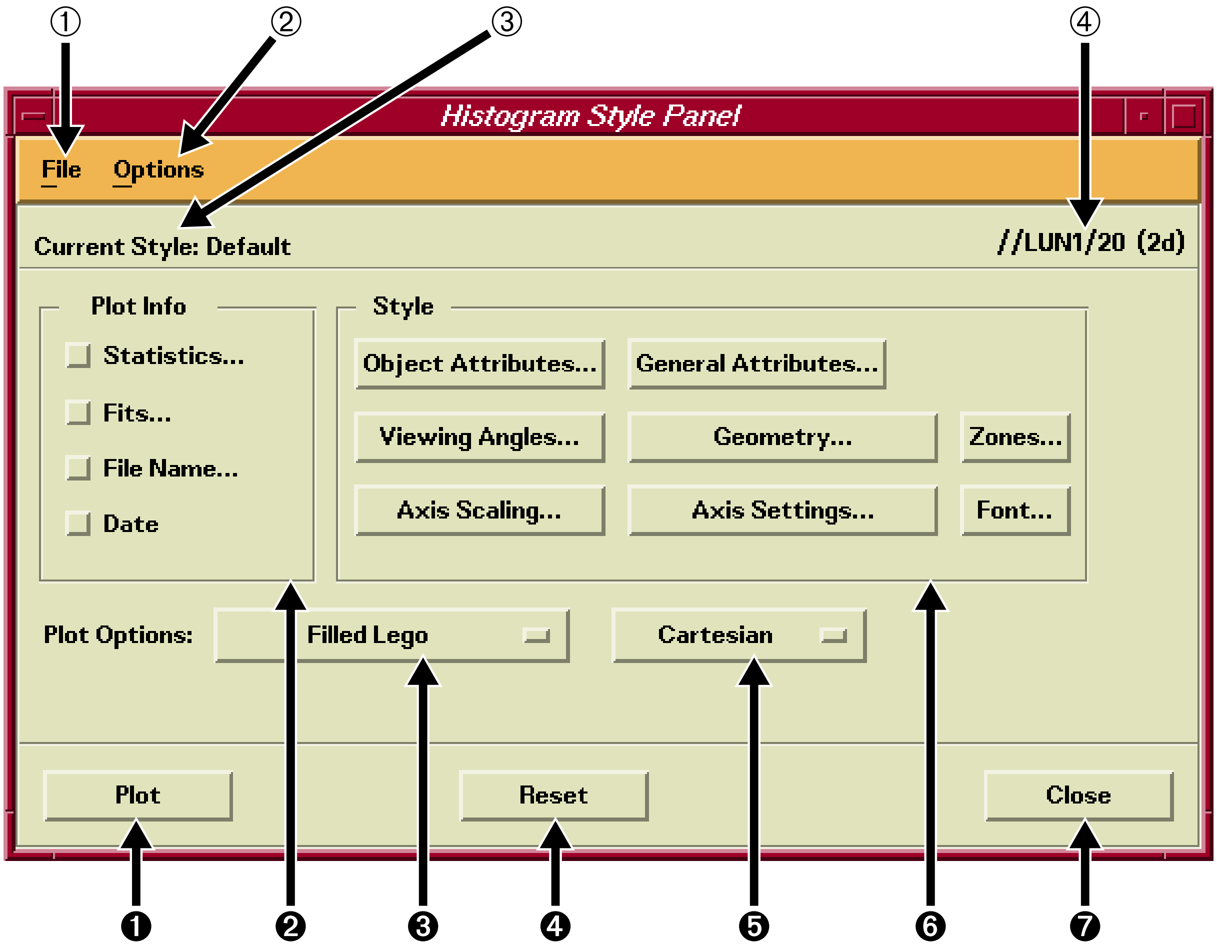
❶ Integrated area.
❷ Output window. It is possible to copy (via the mouse) the text inside this window.
❸ To release the Output window.

① Histogram identifier.

② First bin for the integration.
③ Last bin for the integration.
④ Value of the integral.
⑤ Normalized integral.
⑥ "Mathematical" integral. Each bin contribution is multiply by the bin witdh.

1.5 The Histogram Style Panel

The **Histogram Style Panel** allows to manipulate and present histograms. It works on one histogram only: the "Current histogram". To set the current histogram it is enough to plot it for the **Main Browser**, via a double click on the icon.



❶ Plot the current histogram.
❷ Add informations on the plots.
❸ Define the graphical option used to plot the current histogram.
❹ Reset the default attributes.
❺ Define the coordinate system used to draw lego and surface plots.
❻ Define attibutes used to draw the current histogram.
❼ Close the **Histogram Style Panel**.

① File menu.
② Options menu.
③ Current style name.
④ Current histogram name and type.

1.5.1 The Histogram Style Panel Menu Bar

In this section, is describe the full functionality of the pull down menu available in the Menu Bar of the **Histogram Style Panel**.

File

Open Style Allows to choose and execute a "Style Macro". This "Style Macro" becomes the "current style". This field ③ in the **Histogram Style Panel** is updated with the "current style" name. The "Style Macro" have by default the extension `.sty`.

Save Style Save the "current style". When a style is saved, all the current attribute values are saved in the "Style Macro".

Save Style As... Save the "current style" with a new name.

Close

Options

Automatic Refresh By default the "Automatic Refresh" is on: each time the "current picture" is changed, the graphics window is updated. When this mode is off, the user has to click on one of the Apply button available.

Overlay Each time a new histogram, vector, or ntuple drawing is produced, a clear window is performed. To superimpose all the drawing on the same image, it is enough to put this option on. This option is the equivalent of the option `S` in the command `HISTO/PLOT`.

1.5.2 Plot Info

This set of toggle buttons allow to add some usefull information on the curren plot. If the Automatic refresh mode is on, the plot is automatically refresh.

Statistics... Allow to draw (or not) the statistics on the plot (PAW command `OPTION STAT`). When the toggle button is set on, a panel is displayed in order to specify with parameters will be visible.

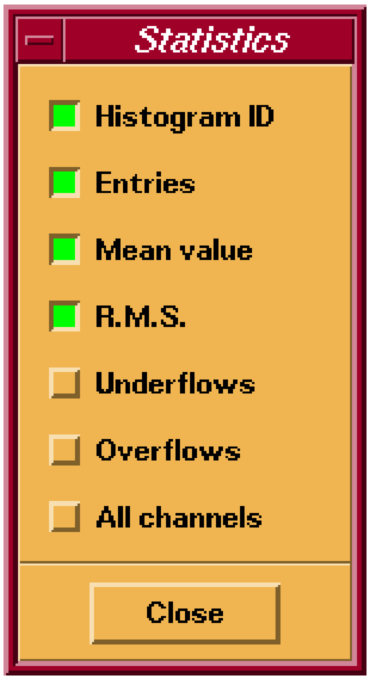
Fits... Allow to draw (or not) the fit parameters on the plot (PAW command `OPTION FIT`). When the toggle button is set on, a panel is displayed in order to specify with parameters will be visible.

File Name... Allow to draw (or not) the file name on the plot (PAW command `OPTION FILE`).When the toggle button is set on, a panel is displayed in order to specify the file name position.

Date... Allow to draw (or not) the date on the plot (PAW command `OPTION DATE`).When the toggle button is set on, a panel is displayed in order to specify the date position

Statistics ...

This panel in the equivalent of the PAW command `SET STAT`. It allows to specify which statistics informations are displayed on the plot.



Histogram ID The histogram identifier is displayed.

Entries The number of entries is displayed.

Mean value The mean value is displayed.

R.M.S. The R.M.S. is displayed.

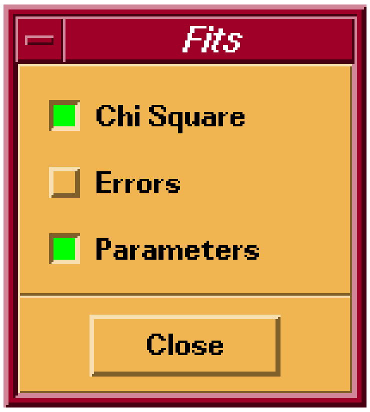
Underflows The underflows are displayed.

Overflows The overflows are displayed.

All channels The content of the total number of channel is displayed.

Fits ...

This panel in the equivalent of the PAW command `SET FIT`. It allows to specify which fit parameters are displayed on the plot.



Chi Square	The chi square is displayed.
Errors	The errors are displayed.
Parameters	The fit parameters are displayed.

File Name ...

This panel in the equivalent of the PAW command `SET FILE`. It allows to specify the file name position on the plot.

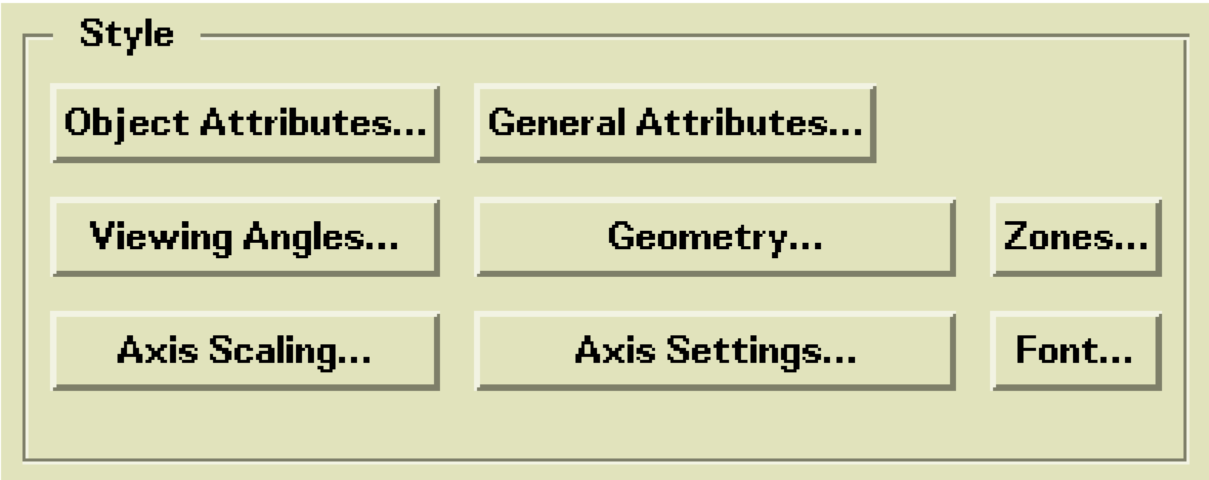
Top Left	The file name is drawn on the top left of the plot (default).
Top Right	The file name is drawn on the top right of the plot
Bottom Left	The file name is drawn on the bottom left of the plot
Bottom Right	The file name is drawn on the bottom left of the plot

Date ...

This panel in the equivalent of the PAW command `SET DATE`. It allows to specify the date position on the plot.

Top Left	The date is drawn on the top left of the plot
Top Right	The name is drawn on the top right of the plot (default).
Bottom Left	The date is drawn on the bottom left of the plot
Bottom Right	The date is drawn on the bottom left of the plot

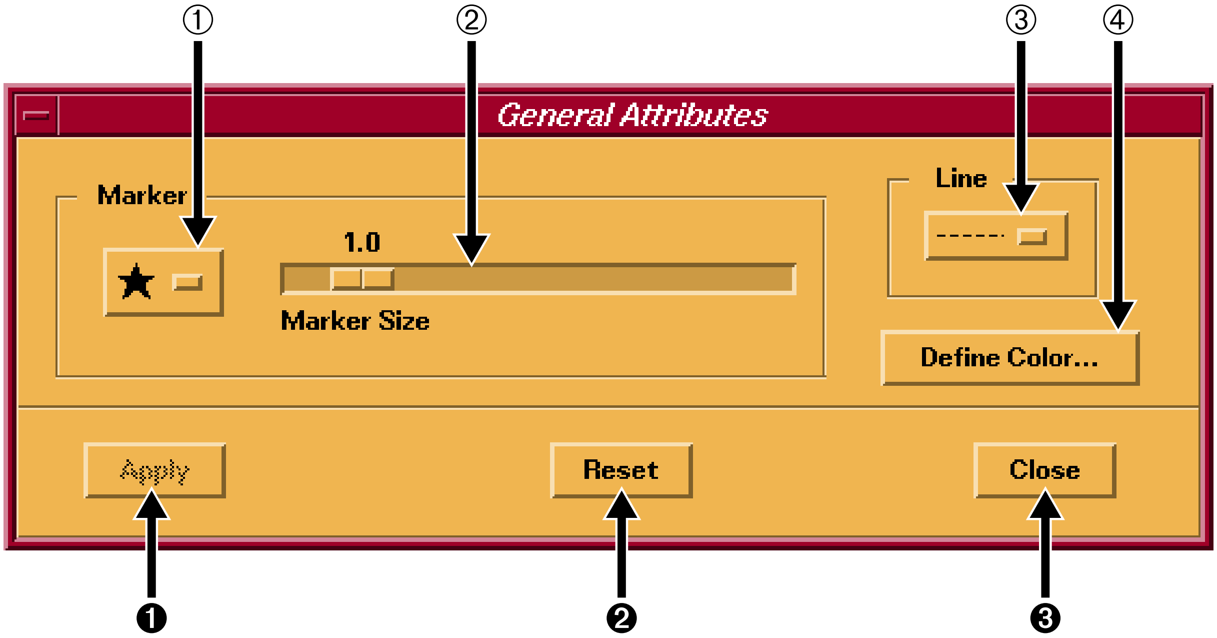
1.5.3 Style



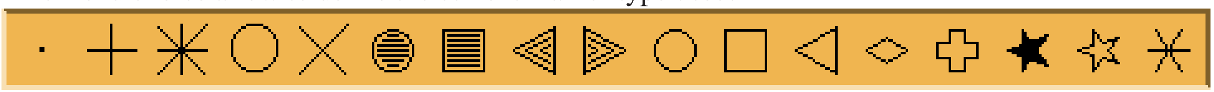
Object Attributes...	Invoke the “Object Attributes” panel.
Viewing Angles...	Invoke the “Viewing Angles” panel.
Axis Scaling...	Invoke the “Axis Scaling” panel.
General Attributes...	Invoke the “General Attributes” panel.
Geometry...	Invoke the “Geometry” panel.
Axis Settings...	Invoke the “Axis Settings” panel.
Zones...	Invoke the “Zones” panel.
Font...	Invoke the “Font” panel.

1.5.4 General Attributes

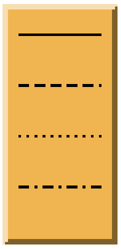
The “General Attributes” panel allow to define attributes like marker type, marker size, line type or color definition for the low level graphics primitives like the lines, the markers the boxes etc...



① This menu choice allow to define the current marker type used.



② This scale allow to change the marker scale factor.
③ This menu choice allow to define the current line style used.

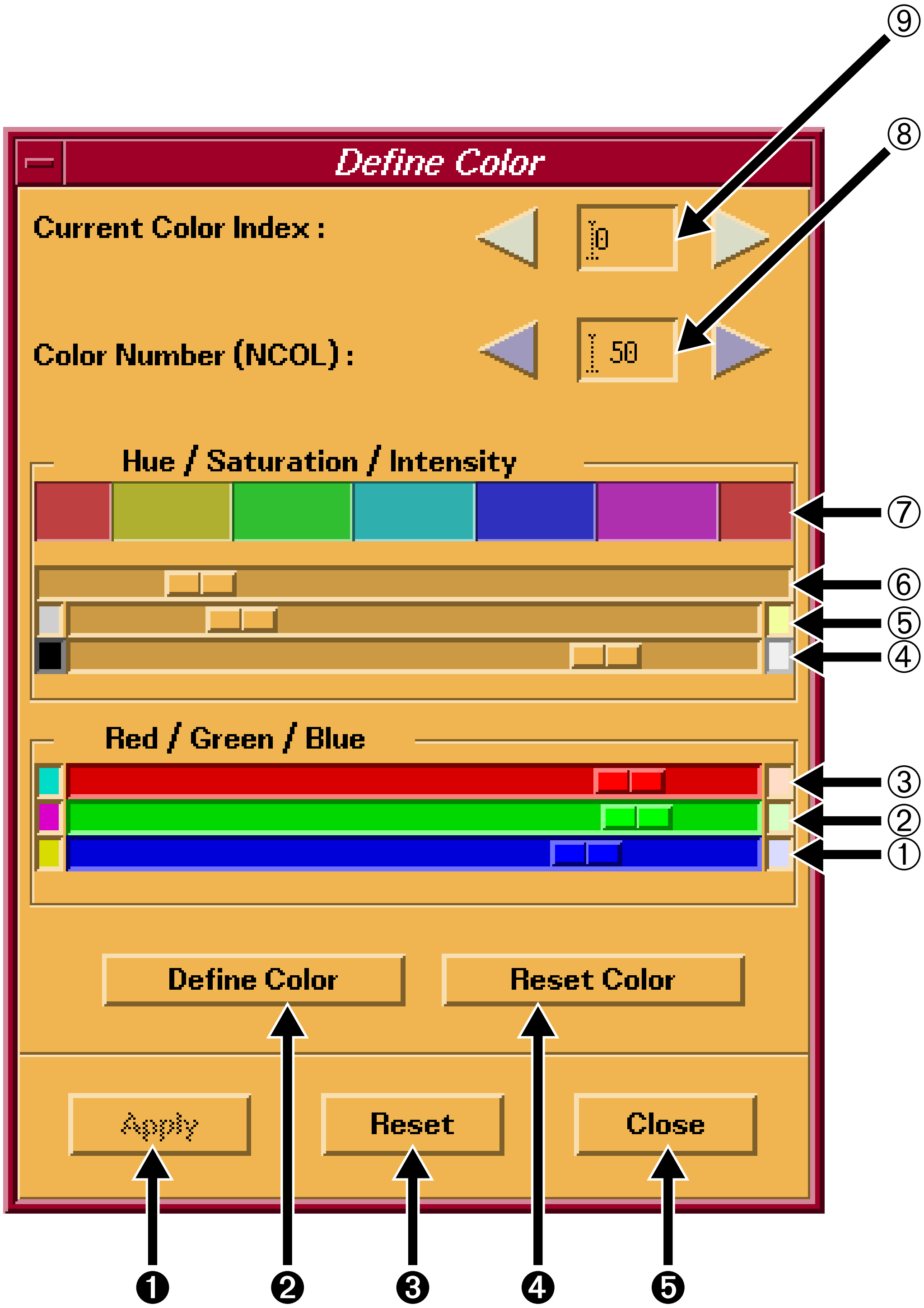


④ This push button open the “Define Color” panel (see after).

❶ By default the “automatic refresh” is on and as soon as an attribute is changed, the current picture is updated with the new attribute value. But when the “automatic refresh” is off, this button becomes active a should pressed in order to update the current picture with the new attribute value.
❷ This push button allow to reset the default value of all the attributes manageable in this panel.
❸ Close this panel.

Define Color

This panel is invoked when the button number ④ is pressed in the “General Attributes” panel. This panel allows to define a color in `RGB` or `HLS` modes.



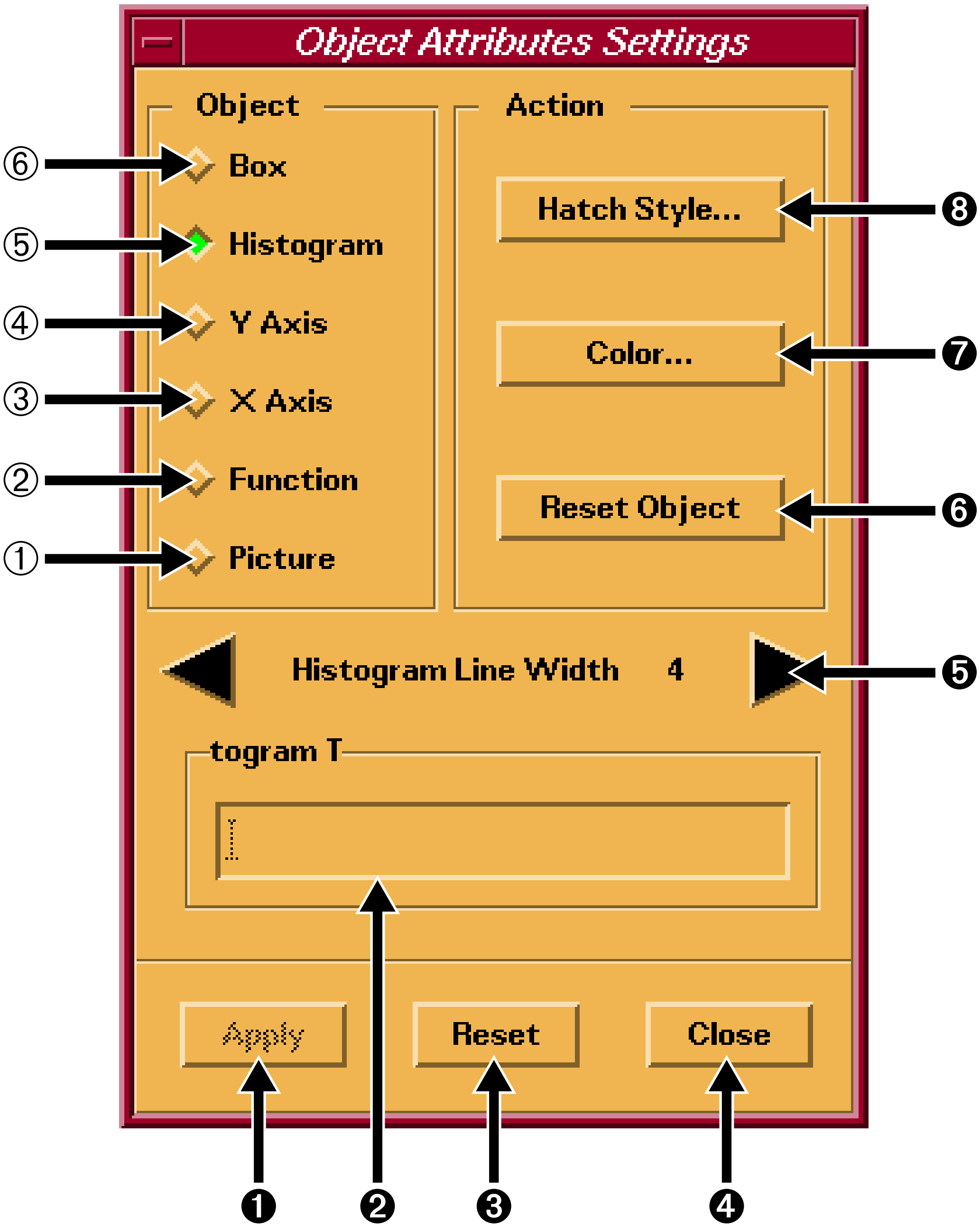
① Percentage of Blue in the color define by the **Current Color index** ⑨.

② Percentage of Blue in the color define by the **Current Color index** ⑨.
③ Percentage of Blue in the color define by the **Current Color index** ⑨.
④ Ligth.
⑤ Saturation
⑥ Hue.
⑦ Hue scale.
⑧ Maximum number of colors.
⑨ Colors index to be changed.

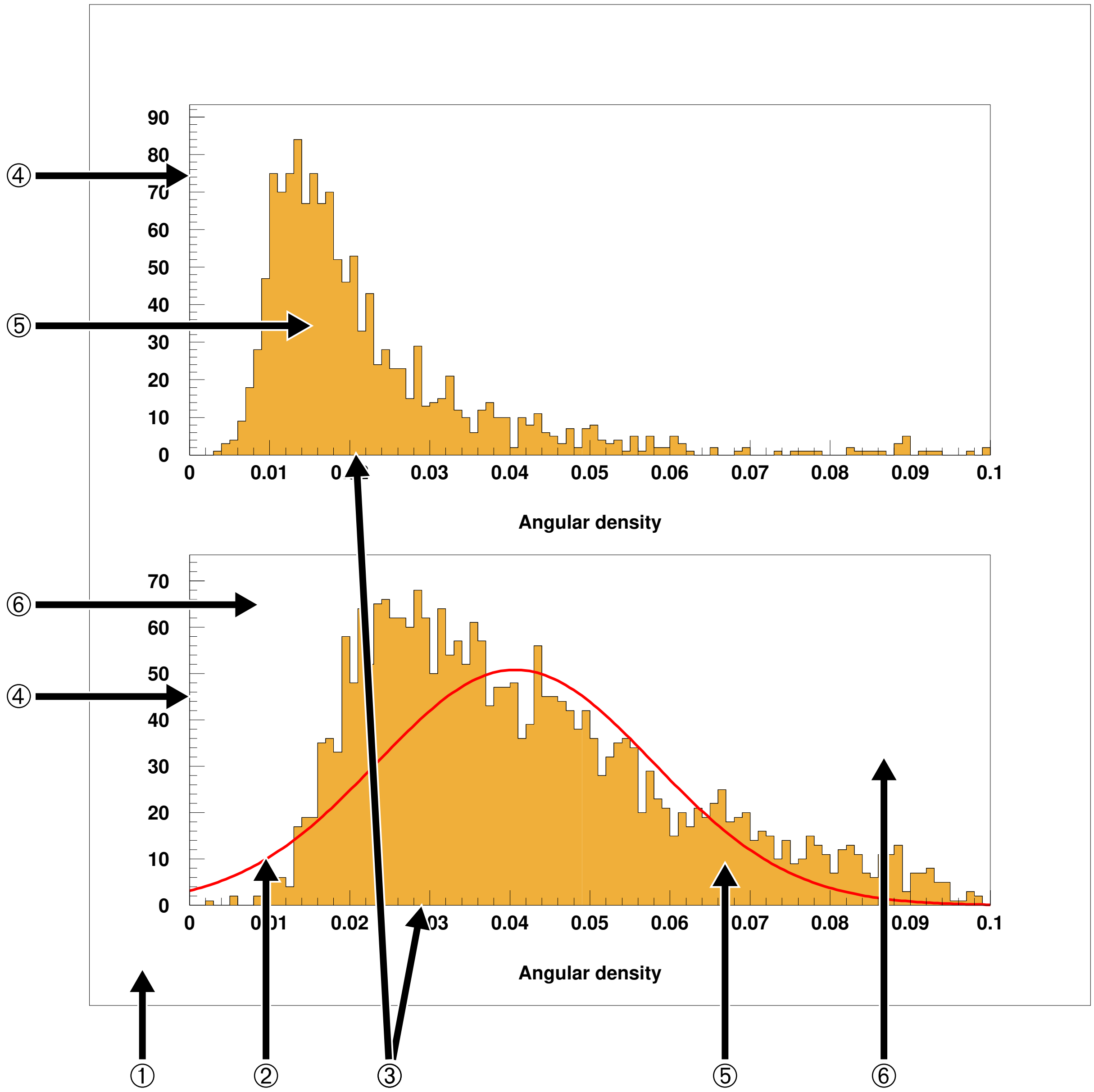
❶ Apply the changes.
❷ Define the color.
❸ Reset the color.
❹ Reset.
❺ Close the panel

1.5.5 Object Attributes

The "Object Attributes" panel allows to define the graphics attributes of the HPLOT objects managed by PAWsuch as: Histograms, Axis etc.. . On the left part of this panel the type of object can be define via a list of toggle buttons. For example here "Histogram" is selected: all the attributes definable in the panel will be apply on the histograms (histogram color, histogram line width etc...).

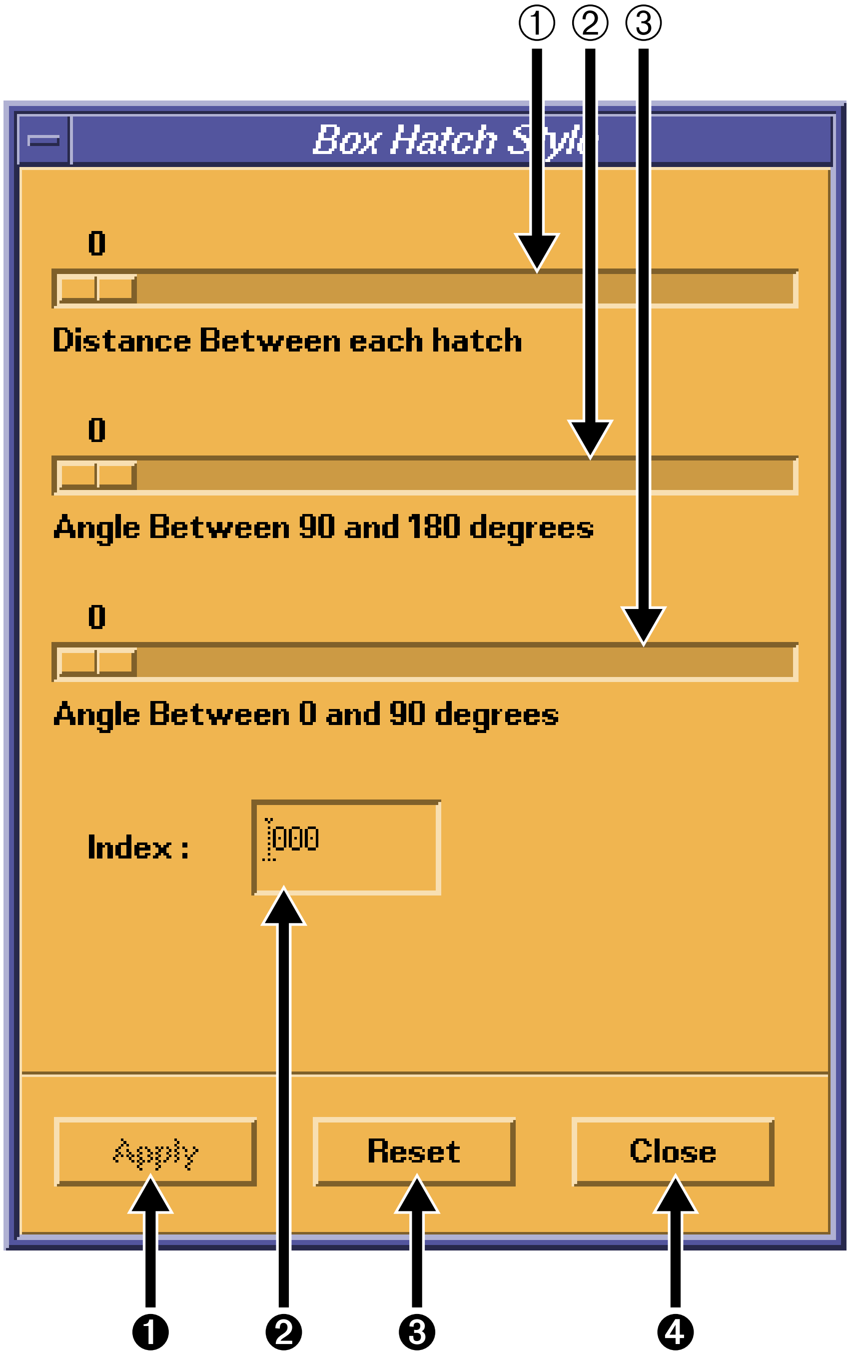


The zones affected by the buttons ① to ⑥, are shown on the next figure.



❶ Apply the changes if the "automatic refresh" is not on.
❷ Change the title of the selected object.
❸ Reset all the attributes.
❹ Close this panel
❺ Change the line width of the selected object.
❻ Reset the attributes of the selected object.
❼ Invoke the "Object Colors" panel.
❽ Invoke the "Object Hatch Style" panel.

Object Hatch Style



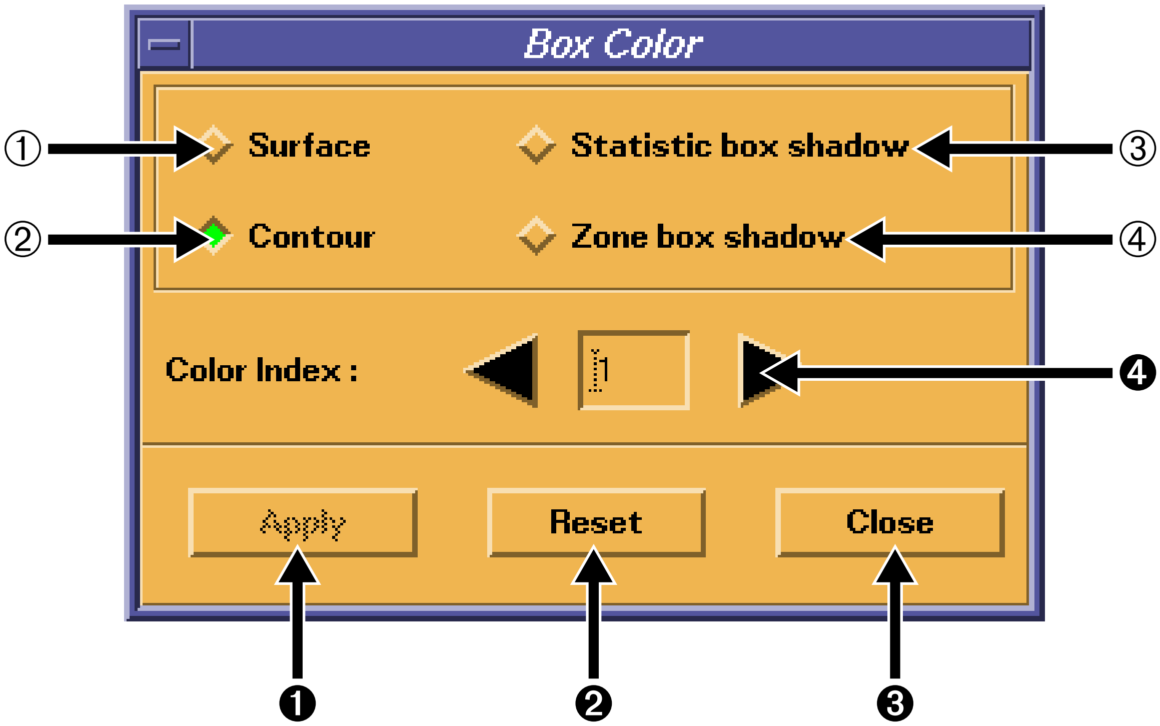
① Define the distance between tow hatches.
② Define the angle of the first set of hatches.
③ Define the angle of the second set of hatches.

❶ Apply
❷ Define the hatches type by number.

❸ Reset the default.
❹ Close this panel.

Object Colors

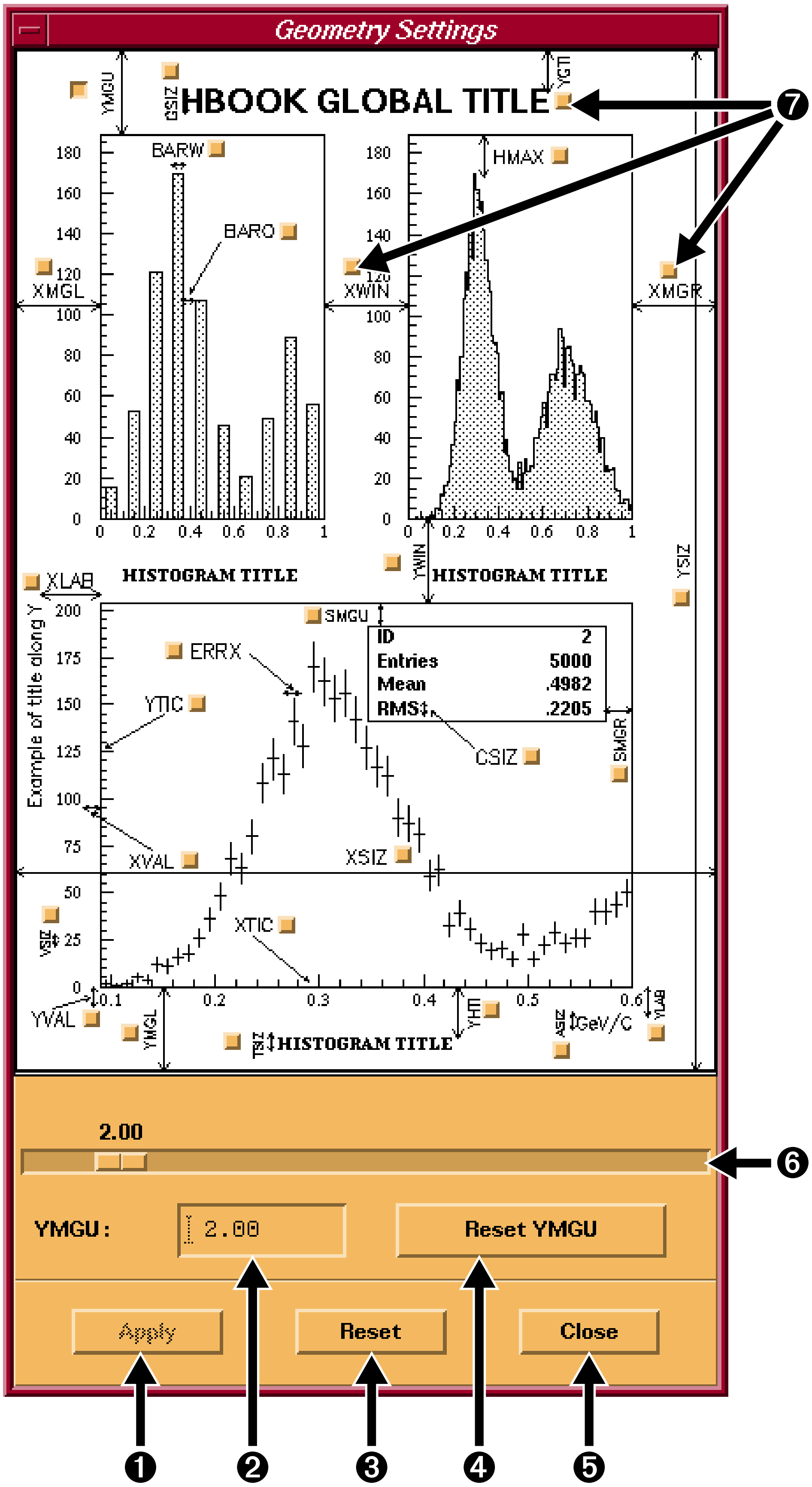
.



① Surface color.
② Contour color.
③ Statistic box shadow color.
④ Zone box shadow color.

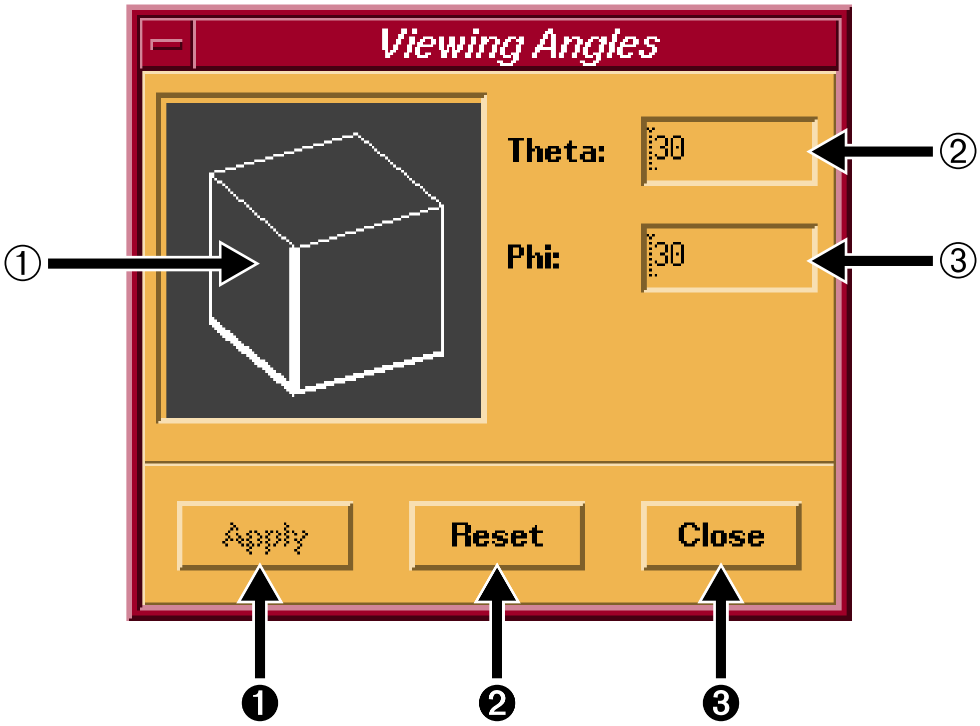
❶ Apply
❷ Reset the color index.
❸ Close the panel.
❹ Define the color index.

1.5.6 Geometry



❶ Apply.
❷ Define the attribute value by number.
❸ Reset the default value.
❹ Name of the current attribute changed.
❺ Close the panel.
❻ Vary continuously the attribute selected.
❼ Select the attribute to be modified.

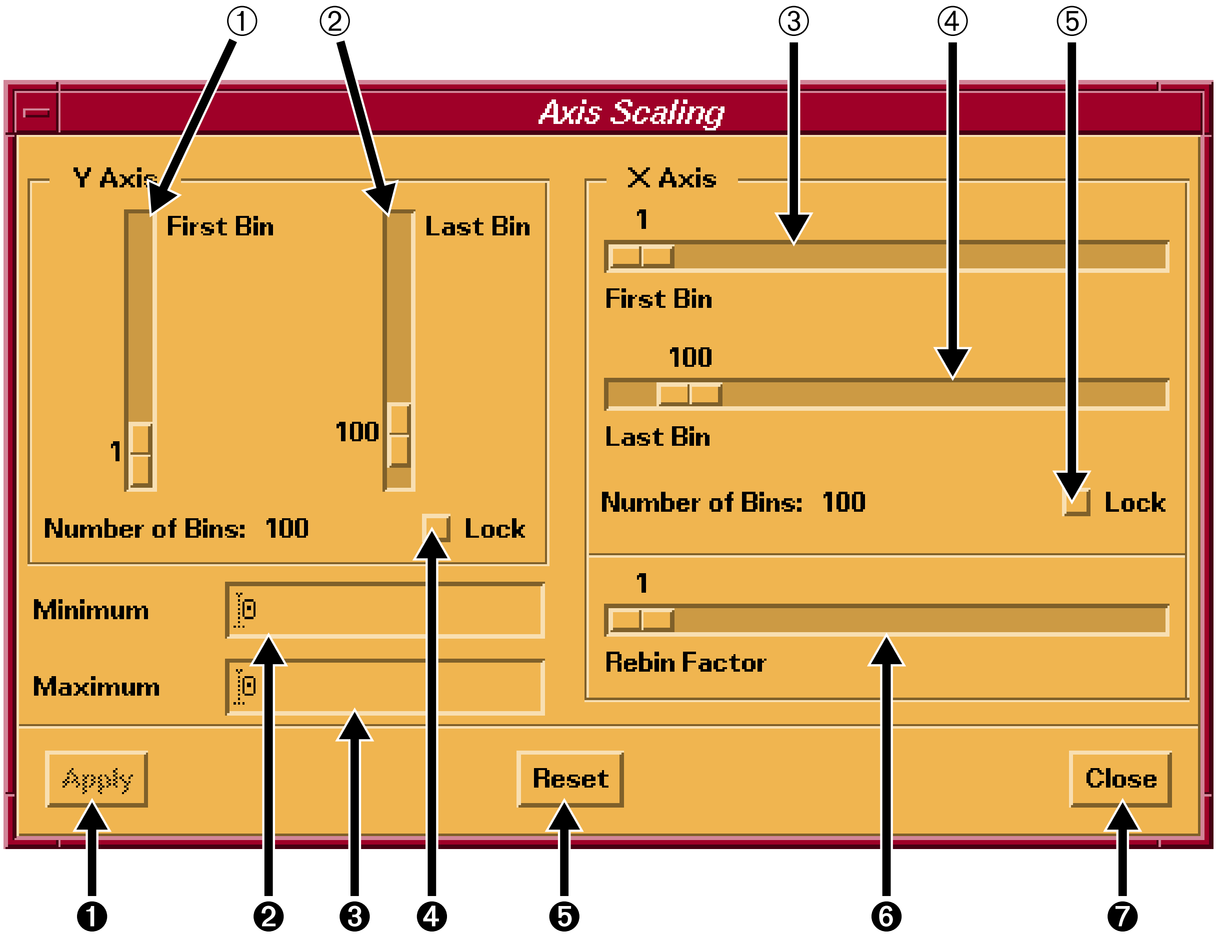
1.5.7 Viewing Angles



① Apply.
② Reset the both angles to 30 degrees.
③ Close the panel.

❶ Rotating cube use to define the angles.
❷ Allow to specify the theta value.
❸ Allow to specify the phi value.

1.5.8 Axis Scaling

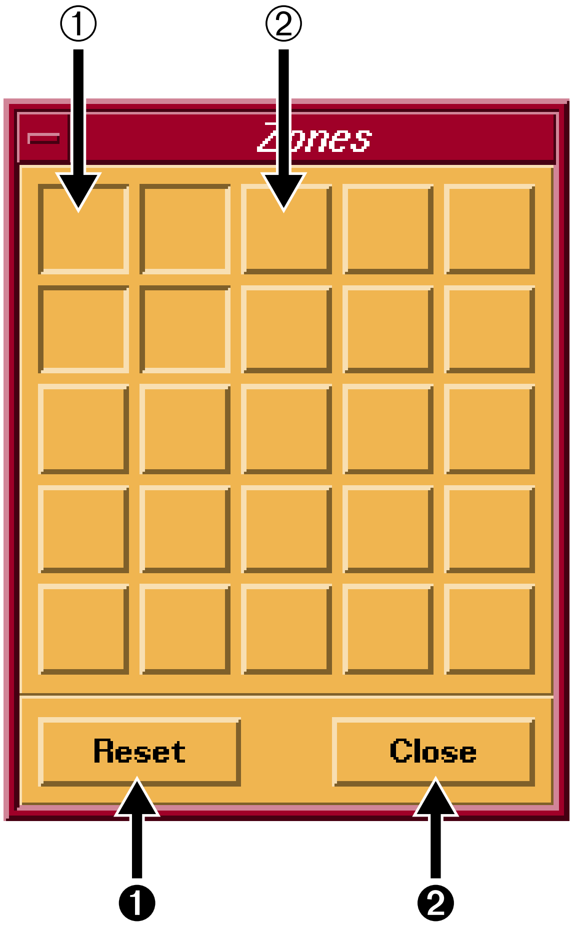


① Change the Y first bin value.
② Change the Y second bin value.
③ Change the X first bin value.
④ Change the X first bin value.
⑤ Lock the range between the first ans the last X bins.

❶ Apply.
❷ Set the minimum Z value.
❸ Set the maximum Z value.
❹ Lock the range between the first ans the last Y bins.
❺ Reset the default values.
❻ Rebin the 1D histograms.
❼ Close the panel.

1.5.9 Zones

This panel is a direct interface to the Zone command.

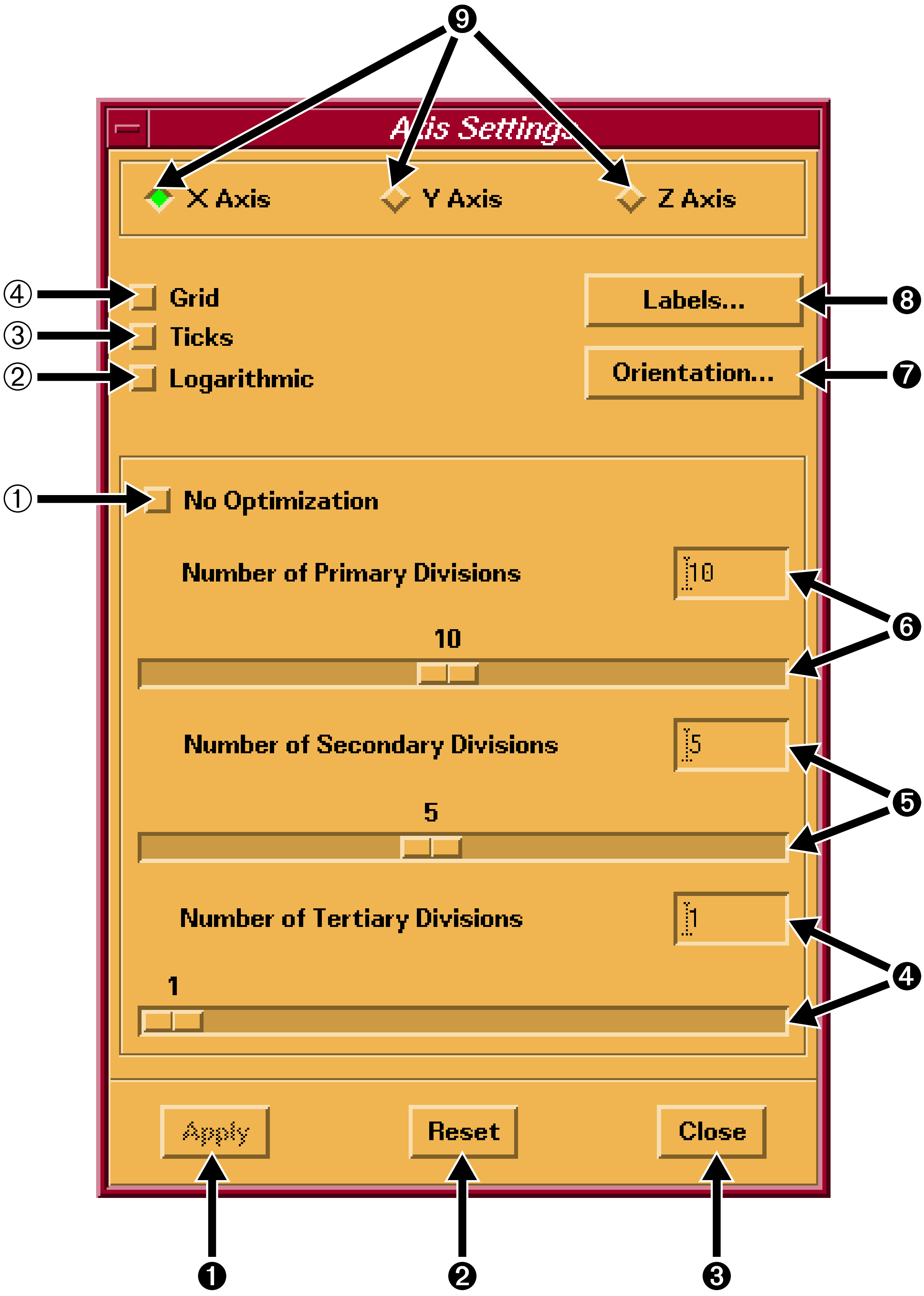


① Active zone.
② Not active zone.

❶ Reset to one zone.
❷ Close the panel.

1.5.10 Axis Settings

This panel allows to define the labelling, number of divisions and axis properties (like LOG scale), of the X, Y and Z axis. This is a direct interface to the commands `SET NDVX`, `NDVY` etc ...

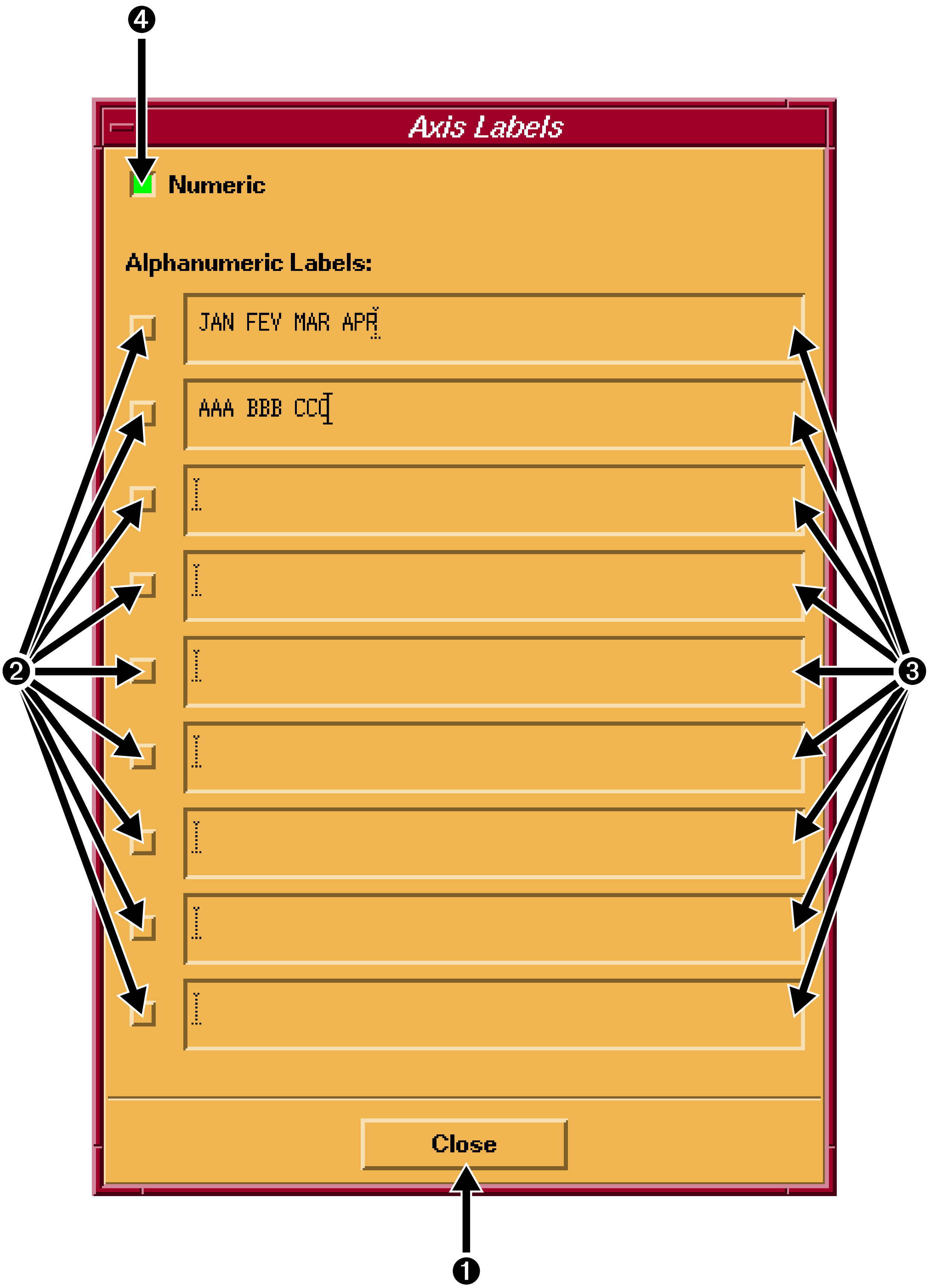

Axis Settings
X Axis
Y Axis
Z Axis
Grid
Ticks
Logarithmic
Labels...
Orientation...
No Optimization
Number of Primary Divisions
10
10
Number of Secondary Divisions
5
5
Number of Tertiary Divisions
1
1
Apply
Reset
Close
❶
❷
❸
❹
❺
❻
❼
❽
❾
①
②
③
④

① Activate or desactivate the tick marks optimization.
② Activate or desactivate the Log scale.
③ Activate or desactivate the additionnal tick marks on the top and right of the plot.
④ Activate or desactivate the grid drawing.

❶ Apply.
❷ Reset the defaults.
❸ Close the panel
❹ Define the tertiary divisions.
❺ Define the secondary divisions.
❻ Define the primary divisions.
❼ Display the “Labels” panel.
❽ Display the “Orientation” panel.
❾ Select on which axis the whole panel will act.

Axis Labels

The panel defines the type of label used.

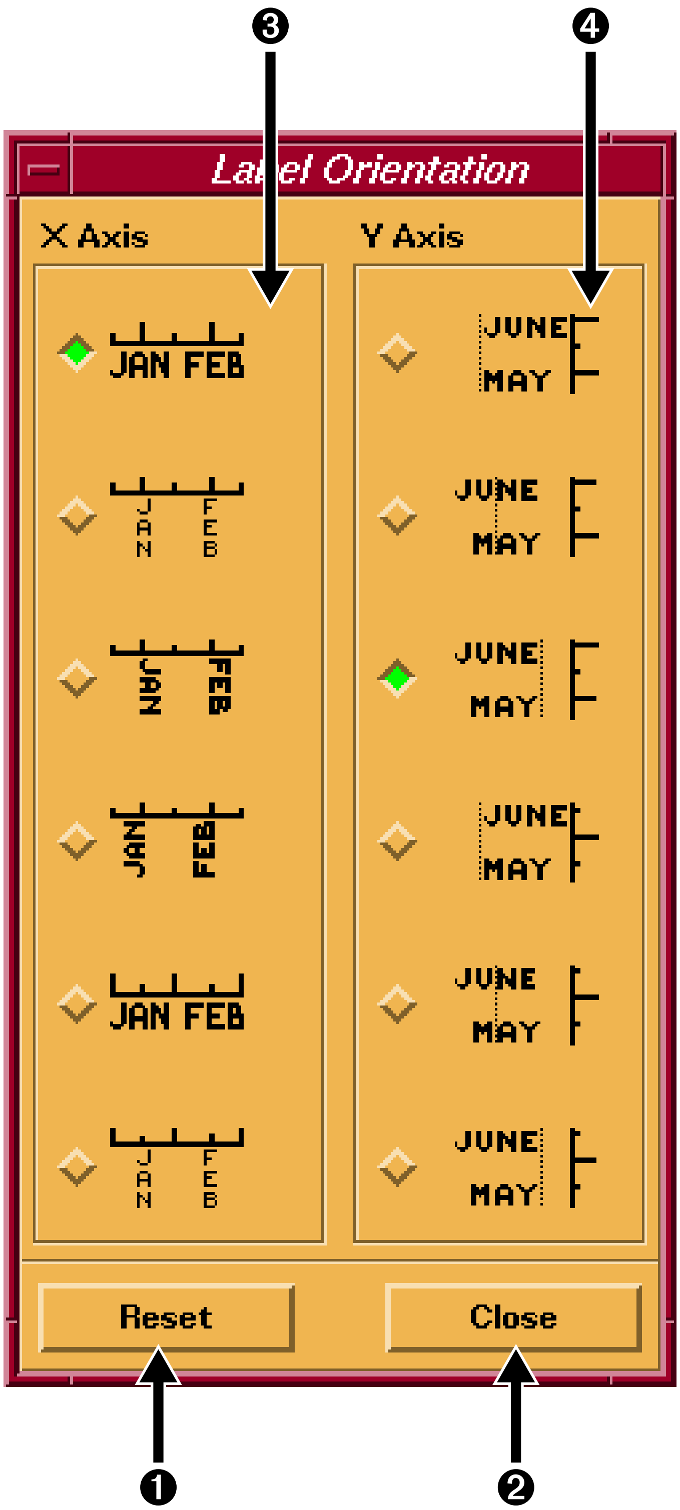


Axis Labels
Numeric
Alphanumeric Labels:
JAN FEV MAR APR
AAA BBB CCC
Close

❶ Close the panel.
❷ Activate one of the alphanumeric list.
❸ Define an alphanumerique list.
❹ The labelling is numeric.

Label Orientation

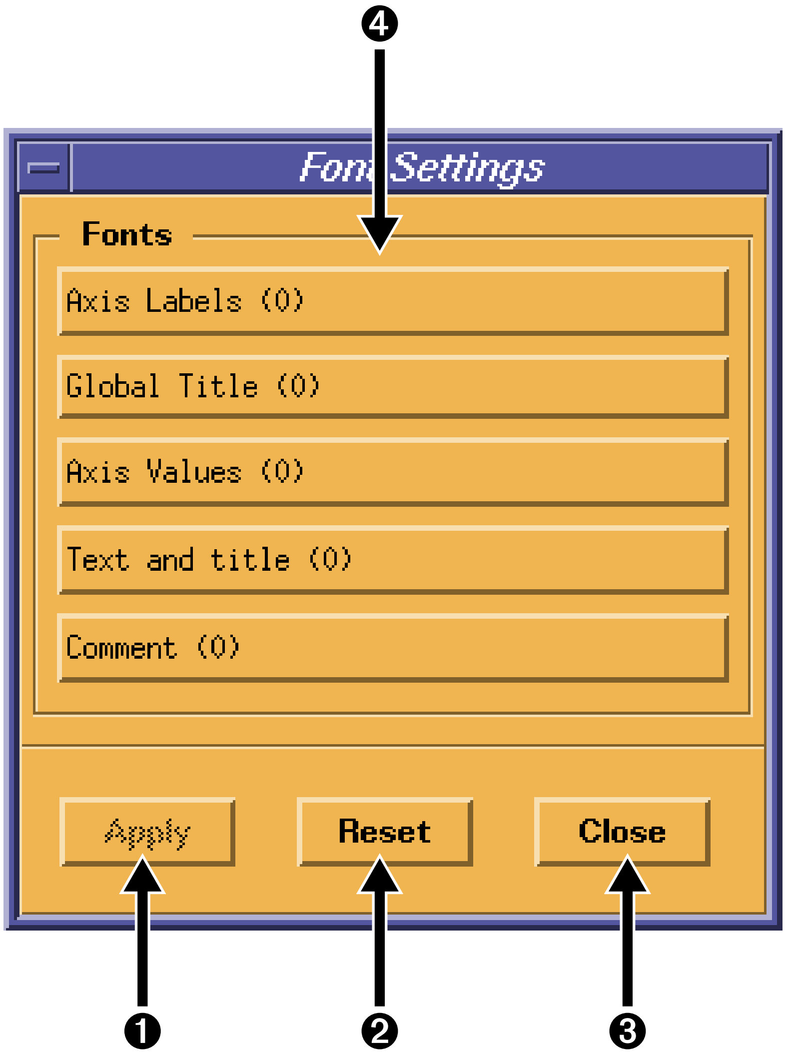
Defines the labels orientation.



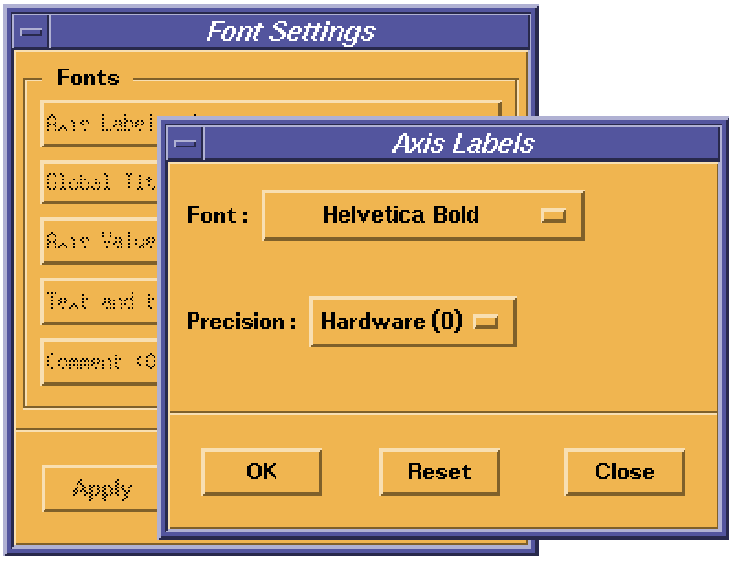
❶ Reset the default orientation.
❷ Close the panel.
❸ Define the X axis labels orientation.
❹ Define the Y axis labels orientation.

1.5.11 Font

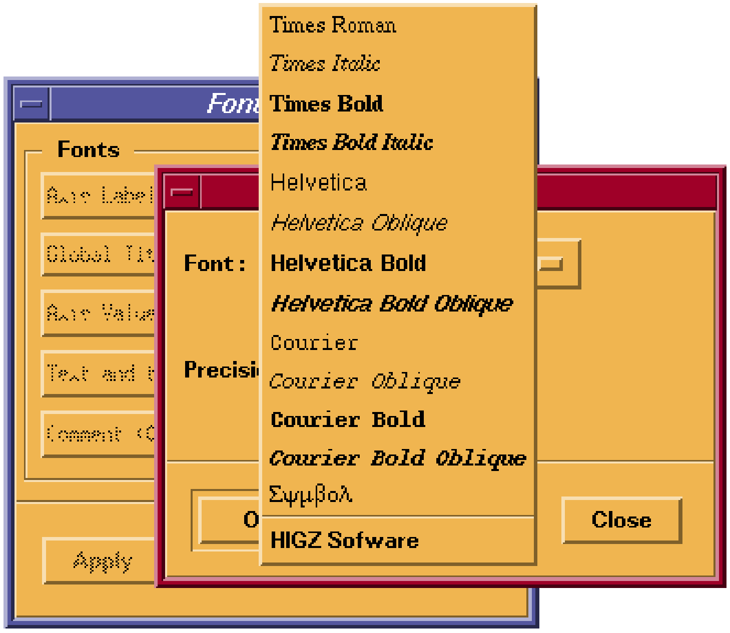
Font selector.



❶ Apply.
❷ Reset the default font.
❸ Close the panel.
❹ Select the font for the various type of text.



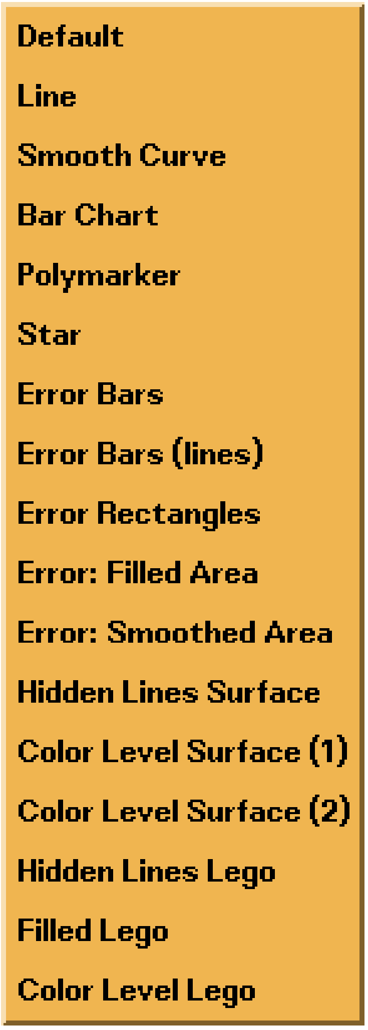
The font settings panel allows to define the font and the precision of a given type of text.



The font may be choosen amoung the standard X11/PostScript fonts.

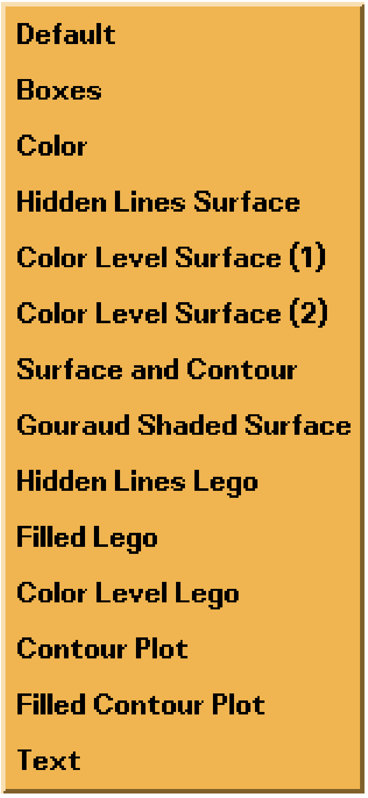
1.5.12 Plot Options

The possible plotting option for 1D histograms available in the **Histogram Style Panel** are the following:



Default	Normal histogram drawing.
Line	Draw the histogram with line.
Smooth Curve	Draw the histogram as a smooth curve.
Bar Chart	Draw the histogram as a bar chart.
Star	Draw the histogram with stars.
Error Bars	Draw the histogram with error bars.
Error Bars (lines)	Draw the histogram with error bars ended with tick marks.
Error Rectangles	Draw the histogram with error rectangles.
Error: Filled Area	Draw the histogram as a filled area.
Error: Smoothed Area	Draw the histogram a a smoothed and filled area.
Hidden Lines Surface	Draw the histogram as a surface.
Color Level Surface (1)	Draw the histogram as a surface.
Color Level Surface (2)	Draw the histogram as a surface.
Hidden Lines Lego	Draw the histogram as a lego.
Filled Lego	Draw the histogram as a lego.
Color Level Lego	Draw the histogram as a lego.

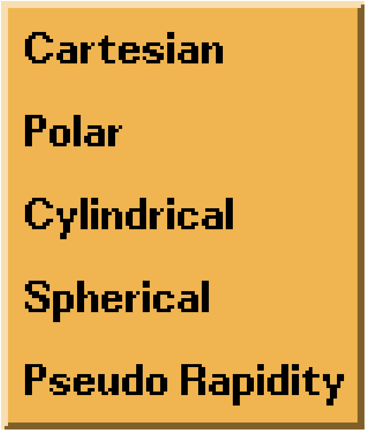
The possible plotting option for 2D histograms available in the **Histogram Style Panel** are the following:



Default	Scatter plot.
Boxes	Boxes plot.
Color	Color plot.
Hidden Lines Surfaces	Surface plot.
Color Level Surface (1)	Surface plot.
Color Level Surface (2)	Surface plot.
Surface and Contour	Surface plot.
Gouraud Shaded Surface	Surface plot.
Hidden Lines Lego	Lego plot.
Filled Lego	Lego plot.
Color Level Lego	Lego plot.
Contour Plot	Line contour plot.
Filled Contour PLot	Filled contour plot.
Text	Text plot.

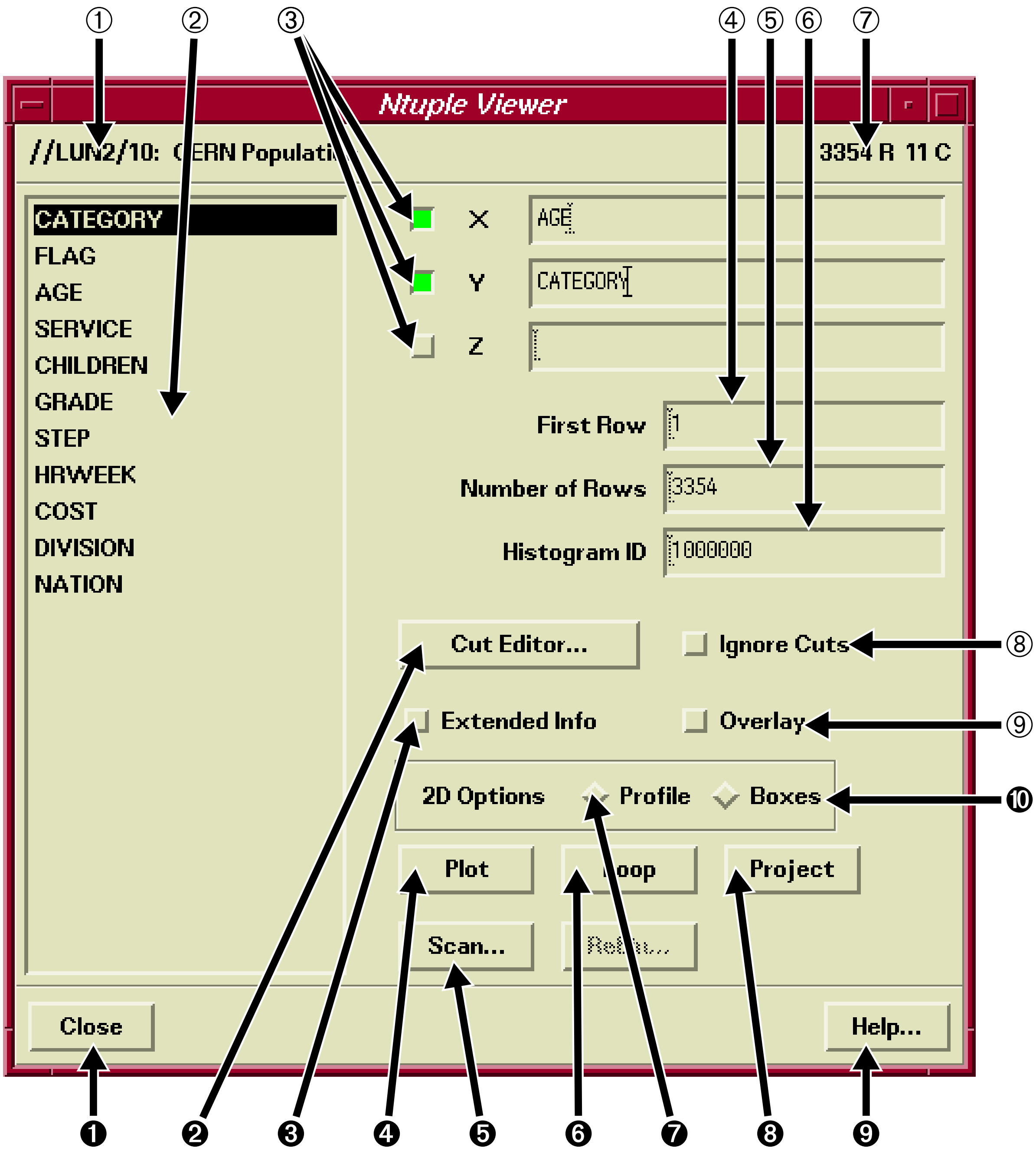
1.5.13 Coordinate Systems

Various coordinate systems can be choosen for surface and lego plots.



Cartesian	All lego and surfaces will be in cartesian coordinates.
Polar	All lego and surfaces will be in polar coordinates.
Cylindrical	All lego and surfaces will be in cylindrical coordinates.
Spherical	All lego and surfaces will be in spherical coordinates.
Pseudo Rapidity	All lego and surfaces will be in pseudo rapidity coordinates.

1.6 Ntuple Viewer



① Field showing the current directory and the name of the Ntuple.

② The names of the variables defined for the Ntuple. If you double click on one of the variable names a histogram showing the values of the variable will be plotted.

③ The X, Y and Z fields allow you to define which variables will be used by the Plot and Scan buttons. These fields can be filled in two ways: firstly by typing the name or an expression of a variable; secondly by double-clicking in one of the X, Y or Z fields. In the latter case the field pointed at is filled with the variable highligted in the list of variables.

④ Defines the first row used in the Ntuple when the `Plot` or `Project` buttons are pressed.

⑤ Defines the number of rows used (starting from `First Row`) when the `Plot` or `Project` buttons are pressed.

⑥ Defines the histogram identifier used when the `Plot` or `Project` buttons are pressed.

⑦ Fields showing the number of rows and columns in the Ntuple.

⑧ A toggle button allowing you to enable/disable the cuts defined with the **Cut Editor**.

⑨ A toggle button, which, when pressed will produce the next plot on top of an already existing one, i.e. without clearing the graphics window.

⑩ If pressed, 2D plots are drawn with boxes.

❶ Close the **Ntuple Viewer**.

❷ Invoke the **Cut Editor**.

❸ When it is pressed, the Ntuple variables types and ranges are also listed.

❹ Produce a plot using all the indications specified on the **Ntuple Viewer** panel.

❺ Invoke the Ntuple Scanner.

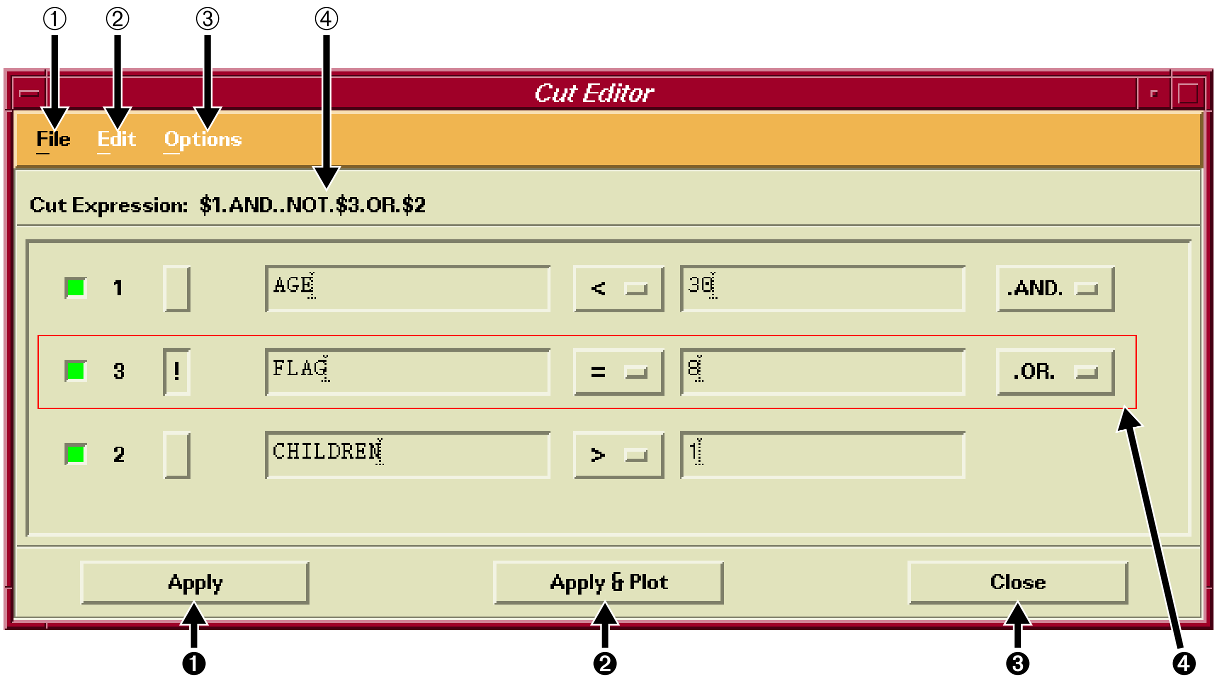
❻ Perform the `NTUPLE/LOOP` command.

❼ If pressed, the 2D plots produce profile histograms.

❽ Project the selected variables in the histogram specify in ⑥.

❾ Help on the **Ntuple Viewer**.

1.7 The Cut Editor



① Invoke the File menu.

② Invoke the Edit menu.

③ Invoke the Options menu.
④ Current cut expression applied.

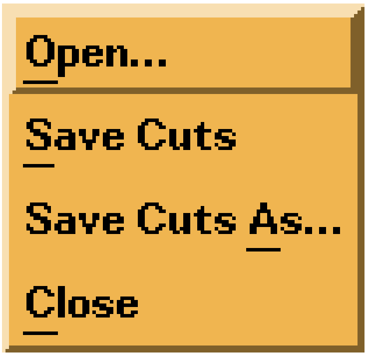
❶ Apply the cut.
❷ Apply the cut and replot the graph.
❸ Close the cut editor.
❹ Cut definition panel. The current cut is highlighted with a red line. A cut can be activate or deactivated with the toggle button on the left. It can be negate with the push button on the right of the cut number. A "!" appears on this button when the cut is negated. The cut definition is done by filling the two editable fields and with the menu choices.

1.7.1 The Cut Editor Menu Bar

In this section, is describe the full functionality of the pull down menu available in the Menu Bar of the **Cut Editor**.

File

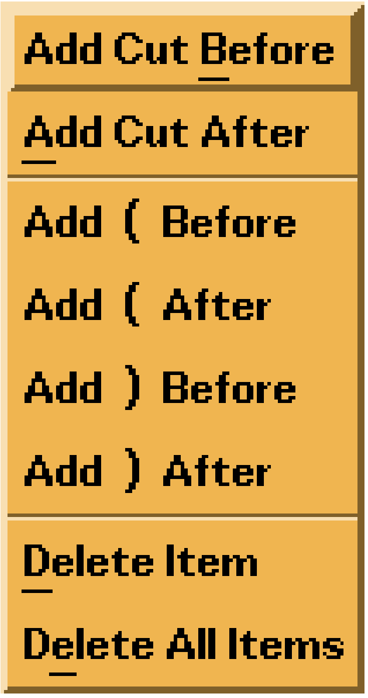
Read/Write cuts on disk.



Open	Open a cut file.
Save Cuts	Save the current cuts on disk.
Save Cuts As ...	Save the current cuts on disk in a spsicific file.
Close	Close the panel.

Edit

Edit the cuts.

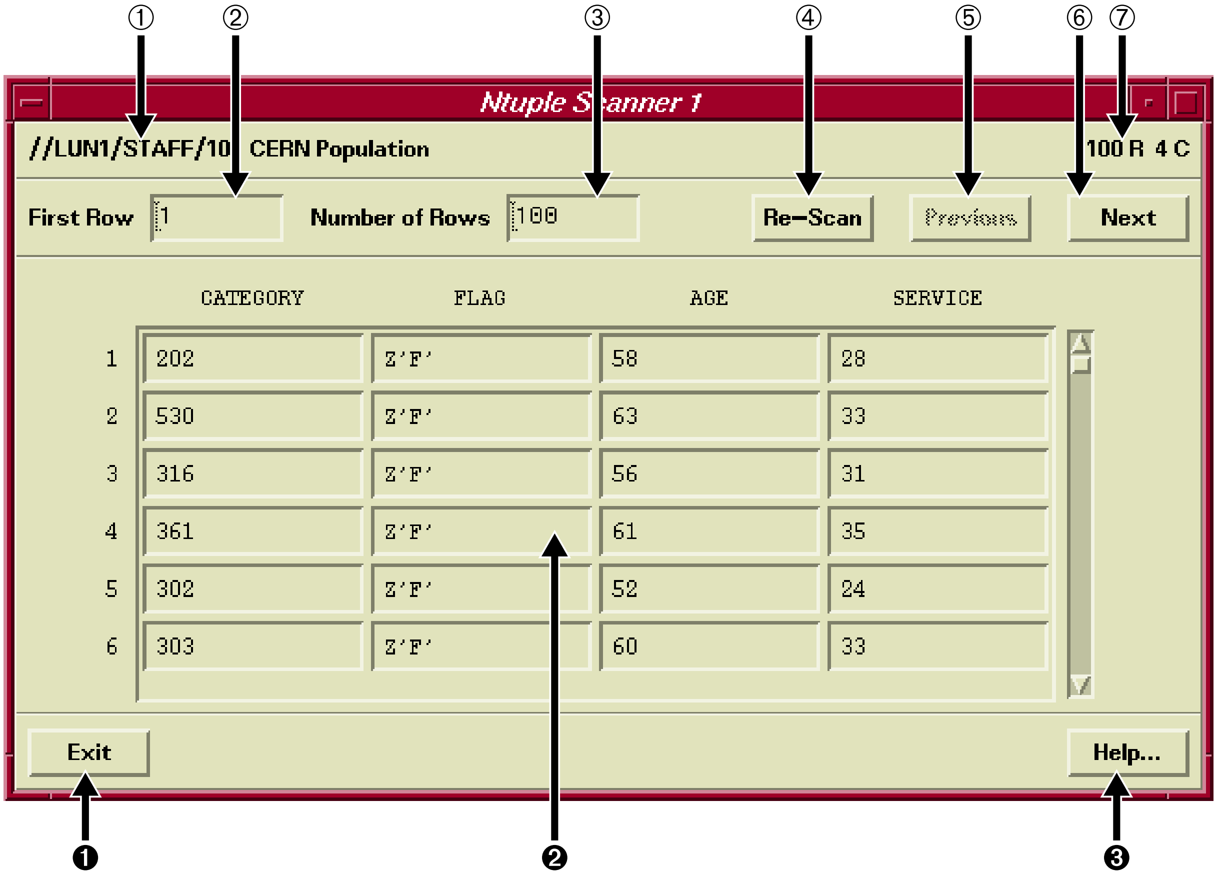


Add Cut Before	Add a cut line before the current cut line.
Add Cut After	Add a cut line after the current cut line.
Add (Before	Add a (line before the current cut line.
Add (After	Add a (line after the current cut line.
Add) Before	Add a) line before the current cut line.
Add) After	Add a) line after the current cut line.
Delete item	Delete the current cut line.
Delete All items	Delete all the cut lines.

Options

Dynamic Mode ...	The current cut can be change dynamically.
Indentation ...	Indente the cut definitions.
Activate all cuts	Activate all cuts
Deactivate All cuts	Deactivate all cuts.

1.7.2 Ntuple Scanner



1.8 KUIP/Motif Panel Interface

The PANEL Interface allows to define command sequences which are executed when the corresponding button is pressed (like `STYLE GP` in PAW/X11). The command sequence

```
PANEL 0
PANEL 4.06 'some string'
PANEL 0 D 'This is my first panel' 500x300+500+600
```

creates a panel with 4 rows and 6 columns of buttons. The text 'some string' should be long enough to fit the longest command Sequence which should be put onto one of the buttons. The 'PANEL 0 D' command defines the title and the window size and coordinates in the form WxH+X+Y.

The panels can be edited interactively:

- Clicking with the right mouse button on an empty panel button the user will be asked to give a definition to this button.

- Clicking with the left mouse button on a panel button removes its definition.

The PANEL commands needed to recreate a panel can be saved into a macro file by pressing the "Save Panel" button. Panels can be reloaded either by executing the command 'PANEL 0 D' or by pressing the

"Command Panel" button in the "View" menu of the **Executive Window** and entering the corresponding file name.

Appendix A: X Window resources

A.1 X resources for PAW++

This is a list of the X resources available to PAW++. Resources control the appearance and behavior of an application.

Users can specify their own values for these resources in the standard X11/Motif way (via their own .Xdefaults file or the system wide /usr/lib/X11/app-defaults/Paw++ file).

Any default values specified by PAW++ are given behind the resource name.

```
Paw++*background:
```

Specify the background color for all windows.

```
Paw++*foreground:
```

Specify the foreground color for all windows.

```
Paw++*kxtermGeometry:                550x550+5+10
```

Geometry of Kxterm, the KUIP terminal emulator (PAW++ **Executive Window**).

```
Paw++*kuipGraphics_shell.geometry:    550x550+585+10
```

Geometry of the Graphics Window(s) (if any).

```
Paw++*kuipBrowser_shell.geometry:     495x511+161+481
```

Geometry of the Browser(s).

```
Paw++*histoStyle_shell.geometry:      599x360+668+631
```

Geometry of the Style Panel.

```
Paw++*ntupleBrowser_shell.geometry:
```

Geometry of the **Ntuple Viewer**.

```
Paw++*XmText*fontList:          *-prestige-medium-r-normal-*-120-*
Paw++*XmTextField*fontList:     *-prestige-medium-r-normal-*-120-*
```

Font used by all text areas.

```
Paw++*kxtermFont:               *-prestige-medium-r-normal-*-120-*
```

Font used by Kxterm (PAW++ **Executive Window**)

```
Paw++*dirlist*fontList:         *-courier-bold-r-normal*-120-*
```

Font used for the icon labels in the browser.

```
Paw++*matrix.fontList:          *-courier-medium-r-normal*-120-*
```

Font used for the Ntuple/Scan matrix (accessible via the **Ntuple Viewer**).

```
Paw++*helpFont:                 *-courier-bold-r-normal*-120-*
```

Font used for help windows.

```
Paw++*fontList:                 *-swiss*742-bold-r-normal-*-120-*
```

Font for the menus, messages and boxes.

```
Paw++*keyboardFocusPolicy:      pointer
```

If "explicit" focus is determined by a mouse or keyboard command. If "pointer" (default), focus is determined by the mouse pointer position.

```
Paw++*doubleClickInterval:      400
```

The time span (in milliseconds) within which two button clicks must occur to be considered a double click rather than two single clicks.

```
Paw++*dirlist*background:
```

Specify the background color for the iconbox part of the browser.

```
Paw++*dirlist*<object>*iconForeground:
```

Specify the foreground color for the icons of type ¡object¿.

```
Paw++*dirlist*<object>*iconBackground:
```

Specify the background color for the icons of type ¡object¿.

```
Paw++*dirlist*<object>*iconLabelForeground:    black
```

Specify the foreground color for the labels of the icons of type ¡object¿.

```
Paw++*dirlist*<object>*iconLabelBackground:    white
```

Specify the background color for the labels of the icons of type ¡object¿. Currently the following different ¡object¿'s are defined:

```
dir     -- directory
1d      -- 1d histograms
2d      -- 2d histograms
ntuple  -- Ntuples
pict    -- Higz pictures
chain   -- Ntuple chains
entry   -- Ntuple chain entries
hbook   -- Hbook files
```

The default iconForeground and iconBackground colors for these objects are:

```
Paw++*dirlist*dir*iconForeground:      blue
Paw++*dirlist*1d*iconForeground:       DarkGoldenrod3
Paw++*dirlist*2d*iconForeground:       DeepPink3
Paw++*dirlist*ntuple*iconForeground:   SteelBlue3
Paw++*dirlist*pict*iconForeground:     green4
Paw++*dirlist*chain*iconForeground:    blue
Paw++*dirlist*entry*iconForeground:    OrangeRed
```

When using a black and white X Server use the following resource settings to make the icons visible:

```
Paw++*dirlist*<object>*iconForeground:          black
Paw++*dirlist*<object>*iconBackground:          white
Paw++*dirlist*<object>*iconLabelBackground:     black
Paw++*dirlist*<object>*iconLabelForeground:     white
```

A.2 X resources for for KUIP/Motif

This is a list of the X resources available to any KUIP/Motif based application (e.g. PAW++). Resources control the appearance and behavior of an application.

Users can specify their own values for these resources in the standard X11/Motif way (via the .Xdefaults file or a file in the /usr/lib/X11/app-defaults directory). One just has to prefix the desired resource by the class name of the application.

To customize PAW++, for instance, all the resources have to be prefixed with `Paw++` or they should be stored in the file /usr/lib/X11/app-defaults/Paw++.

Any default values specified by KUIP are given behind the resource name.

```
*background:
```

Specify the background color for all windows.

```
*foreground:
```

Specify the foreground color for all windows.

```
*kxtermGeometry:                550x550+5+10
```

Geometry of Kxterm, the KUIP terminal emulator (**Executive Window**).

```
*kuipGraphics_shell.geometry:    550x550+585+10
```

Geometry of the graphics window(s) (if any).

```
*kuipBrowser_shell.geometry:     580x450
```

Geometry of the browser(s).

```
*XmText*fontList:                *-helvetica-bold-r-normal*-120-*
*XmTextField*fontList:           *-helvetica-bold-r-normal*-120-*
```

Font used by all text areas.

```
*kxtermFont:
```

Font used by Kxterm (PAW++ **Executive Window**)

```
*dirlist*fontList:
```

Font used for the icon labels in the browser.

```
*helpFont:                       *-courier-bold-r-normal*-120-*
```

Font used for help windows.

```
*fontList:                       *-helvetica-bold-r-normal*-120-*
```

Font for the menus, messages and boxes.

```
*keyboardFocusPolicy:            explicit
```

If “explicit” (default), focus is determined by a mouse or keyboard command. If “pointer” focus is determined by the mouse pointer position.

```
*doubleClickInterval:            250
```

The time span (in milliseconds) within which two button clicks must occur to be considered a double click rather than two single clicks.

```
*dirlist*background:
```

Specify the background color for the iconbox part of the browser.

```
*dirlist*<object>*iconForeground:          black
```

Specify the foreground color for the icons of type ¡object¿.

```
*dirlist*<object>*iconBackground:          white
```

Specify the background color for the icons of type ¡object¿.

```
*dirlist*<object>*iconLabelForeground:     black
```

Specify the foreground color for the labels of the icons of type ¡object¿.

```
*dirlist*<object>*iconLabelBackground:     white
```

Specify the background color for the labels of the icons of type ¡object¿.

```
*zoomEffect:                     True
```

Turn zoom effect on or off when going up and down directories in the browser.

```
*zoomSpeed:                      10
```

Specify speed of zoom effect in the browser.
Currently the following different ¡object¿'s are defined:

```
Cmd        -- Command
InvCmd     -- Deactivated command
Menu       -- Menu tree
MacFile    -- Macro File
RwFile     -- Read-write file
RoFile     -- Readonly file
NoFile     -- No access file
ExFile     -- Executable file
DirFile    -- Directory
DirUpFile  -- Up directory (..)
```

When using a black and white X Server use the following resource settings to make the icons visible:

```
*dirlist*<object>*iconForeground:          black
*dirlist*<object>*iconBackground:          white
*dirlist*<object>*iconLabelBackground:     black
*dirlist*<object>*iconLabelForeground:     white
```

Appendix B: Editing keys in the Input Pad

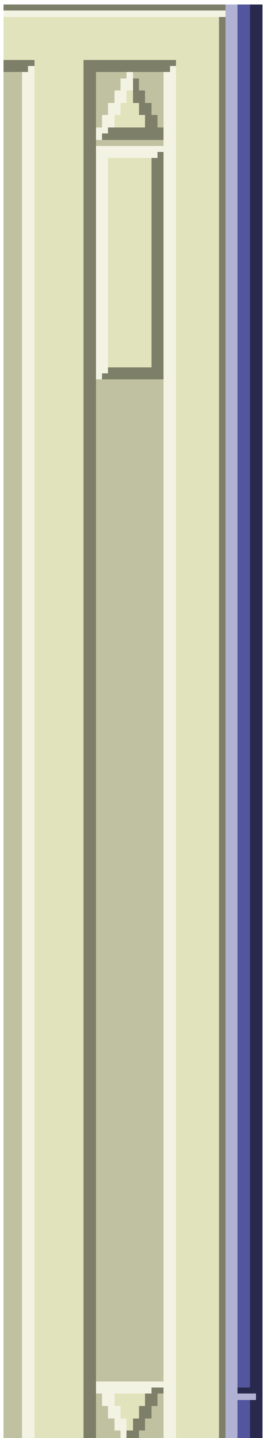
```
"C-b" means holding down the Control key and pressing the b key.
"M-" stands for the Meta key and "A-" for the Alt key.

C-b:              backward character
A-b:              backward word
M-b:              backward word
Shift A-b:        backward word, extend selection
Shift M-b:        backward word, extend selection
A-[:              backward paragraph
M-[:              backward paragraph
Shift A-[:        backward paragraph, extend selection
Shift M-[:        backward paragraph, extend selection
A-<:              beginning of file
M-<:              beginning of file
C-a:              beginning of line
Shift C-a:        beginning of line, extend selection
C-osfInsert:      copy to clipboard
Shift osfDelete:  cut to clipboard
Shift osfInsert:  paste from clipboard
Alt->:            end of file
M->:              end of file
C-e:              end of line
Shift C-e:        end of line, extend selection
C-f:              forward character
A-]:              forward paragraph
M-]:              forward paragraph
Shift A-]:        forward paragraph, extend selection
Shift M-]:        forward paragraph, extend selection
C-A-f:            forward word
C-M-f:            forward word
C-d:              kill next character
A-BS:             kill previous word
M-BS:             kill previous word
C-w:              kill region
C-y:              yank back last thing killed
C-k:              kill to end of line
C-u:              kill line
A-DEL:            kill to start of line
M-DEL:            kill to start of line
C-o:              newline and backup
C-j:              newline and indent
C-n:              get next command, in hold mode: next line
C-osfLeft:        page left
C-osfRight:       page right
```

`C-p:`	`get previous command, in hold mode: previous line`
`C-g:`	`process cancel`
`C-l:`	`redraw display`
`C-osfDown:`	`next page`
`C-osfUp:`	`previous page`
`C-SPC:`	`set mark here`
`C-c:`	`send kill signal to application`
`C-h:`	`toggle hold button of pad containing input focus`
`F8:`	`re-execute last executed command`
`Shift F8:`	`put last executed command in input pad`
`Shift-TAB:`	`change input focus`

Appendix C: The Motif user interface tools

C.1 Scale



A scale can be moved with the scale button, or with the two arrows (top and bottom). It is usualy linked to some quantity which may vary continuously.

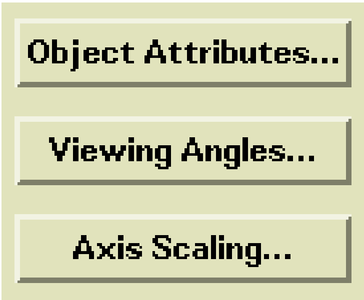
C.2 Buttons

Various kind of buttons are available in Motif: Toggle, Push and Selectionbuttons.

C.2.1 Toggle Buttons

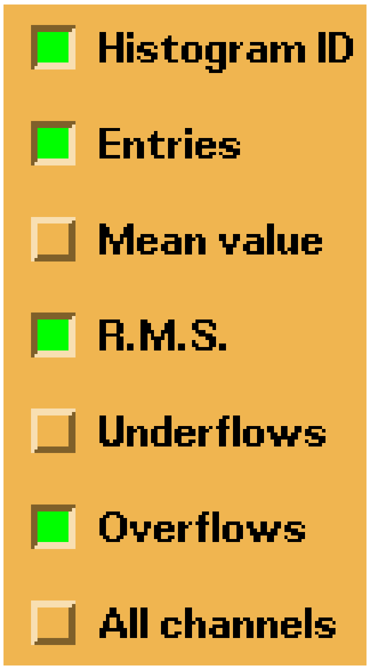
The toggle buttons are usually used for Yes/No choices. In a serie of toggle button, only one can be push.

C.2.2 Push Buttons



Push buttons are usualy used to perform a specific action. Very often they open an other panel.

C.2.3 Selection Buttons



Selection buttons are used to select an option or a special mode. They are not linked together like the toggle buttons and they can be on independently from the state of the others.

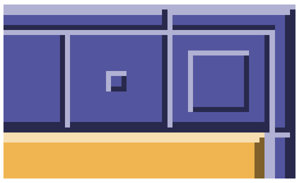
C.3 Paned Window

Paned window separate a window in several part. Each part is resizable but the global size stay the same: when a part grow an other one reduce.

C.4 Window manager buttons

This tools a present on all the Motif windows.

A double click on this button closes the window. a simple click display a pull down menu. The content of the this menu depends on the window manager used.



These two buttons allows respectively to iconise and to enlarge a window to the maximum size possible on the screen.

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