GIANO: The Graphical User Interface Manual

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Prepared by :	*Signature*
Name: S. Scuderi *Institute:* INAF – Osservatorio Astrofisico di Catania *Date :*	Salvatore Scuderi
Approved by :	*Signature*
Name: L. Origlia *Institute:* INAF – Osservatorio Astronomico di Bologna *Date :*	Livia Origlia
Released by :	*Signature*
Name: *Institute:* INAF – FGG *Date :*	

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1 INTRODUCTION

1.1 SCOPE

This document describes the GUI of the GIANO instrument. The document is intended as a guide for the general observer.

1.2 REFERENCE DOCUMENTS

- [RD1]: C. Baffa, E. Giani, "GIANO Project: Overview of Low Level Software", Arcetri Technical Report n. 6/2013

1.3 ACRONYMS

- ADU – Analogue to Digital Units
- FPA – Focal Plane Array
- DEC - Declination
- FOV – Field of view
- FWHM – Full Width Half Maximum
- GUI – Graphical User Interface
- PA – Position Angle
- RA – Right Ascension
- TBC – To Be Confirmed
- TBD – To Be Done
- TBW – To Be Written
- TNG – Telescopio Nazionale Galileo

2 THE GIANO USER INTERFACE MAIN PANEL

The GIANO user interface main panel contains all the tools that allow the user to manage the instrument and to asses quickly the quality of the data obtained. When starting an observing session with GIANO, the user interface main window will appear as shown in Figure 1.

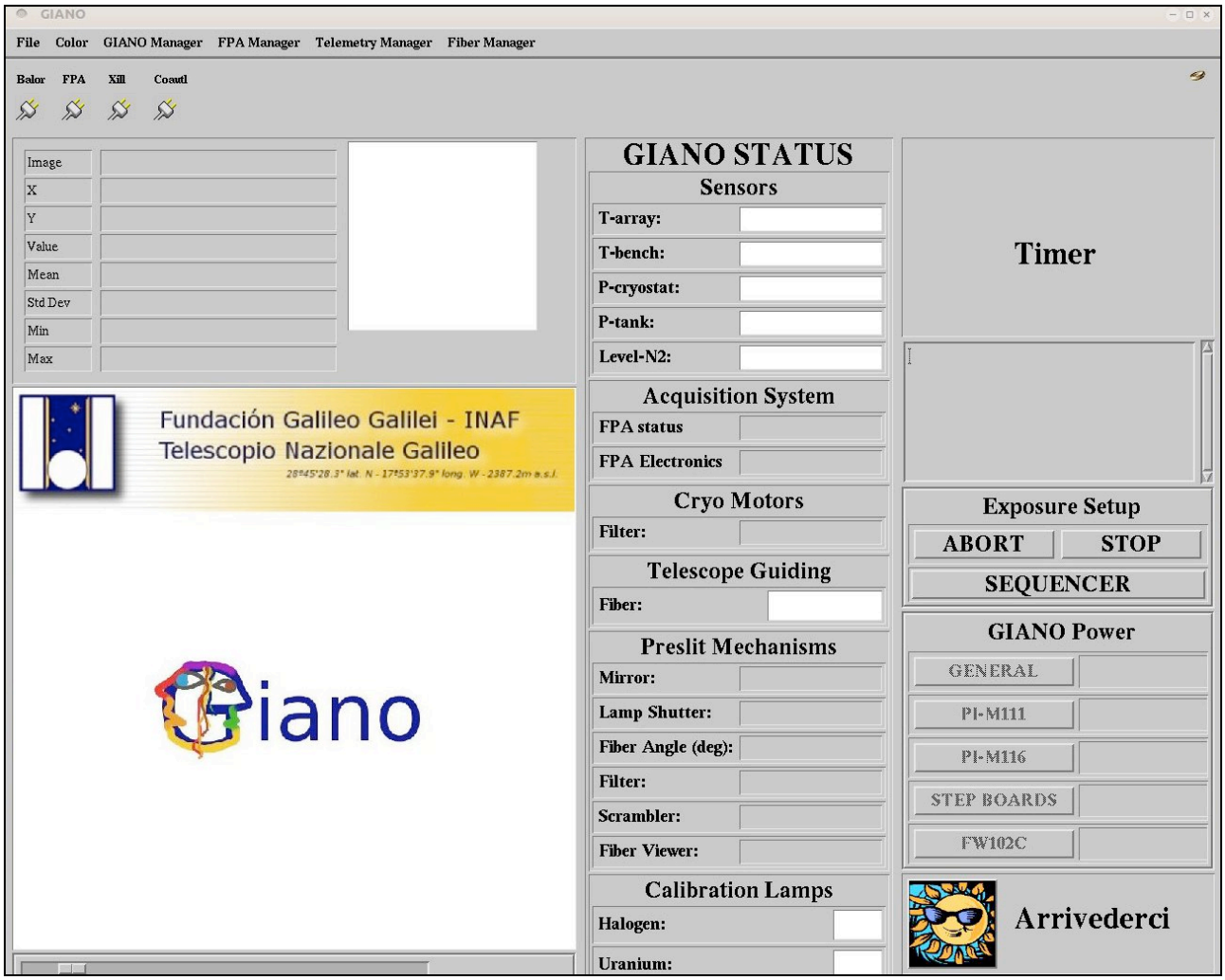

Figure 1. The Giano user interface main panel as it appears when starting an observing session

The top part of the window contains several scroll down menus whose functions are clearly identified by their label. Below that there is a panel (Utilities Panel) containing few informative icons. The GUI main window can be divided into three main groups of panels or windows that from left to right are: the **Quick Look Area**, the **Status Area** and the **Exposure Control Area**.

The Quick Look Area allows the user to get information on the last image acquired by the instrument or on the one loaded through the file menu. Several tools are available to analyse the image.

The Status Area contains all the information regarding the status of the instrument.

Finally the Exposure control area contains buttons to start the sequencer panel to stop an exposure (or group of exposures) and a series of widgets that give information on the action being performed by the GUI and/or the instrument.

The description and the functions of the different panels are given in details in the following sections.

3 THE SCROLLDOWN MENUS

The top part of the GUI main window contains 6 scroll down menus: File menu, Color menu, GIANO manager menu, the FPA manager menu, the Telemetry manager menu and the Fiber manager menu.

3.1 File Menu

The File menu (Figure 2) allows the user to open a file, to display the FITS header of the image currently displayed and finally to exit from the GUI.

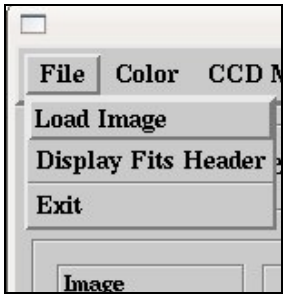

Figure 2. File menu

3.1.1 Load Image

This button opens a dialog window to load a FITS image into the display.

3.1.2 Display fits header

This button opens a window which contains the FITS header of the image shown in the display. The window has on the top left corner a "DONE" button that closes it.

3.1.3 Exit

This button exits the GIANO observing session. Note that it is possible to close the observing session also through the window manager and thorough the button in the exit panel (sect.7.4).

3.2 Color Menu

The color menu (Figure 3) allows the user to change the color table used to display the image.

Figure 3. Colour menu

3.2.1 Color tables

There are five colour tables that can be selected: Black and White, Blue and White, Red Temperature, Rainbow and EOS A. When a particular color table is chosen, aside the corresponding menu entry a highlighted selection box appears. The default colour table is Black and White.

3.2.2 Invert colour map

This button allows to invert the selected color table. When the color map inversion is applied a highlighted selection box aside the menu entry appears.

3.3 GIANO Manager Menu

The GIANO Manager menu (Figure 4) allows the user to perform the start up of the instrument. There are two entries in the menu: The System Start Up button and the Balor Start Up button.

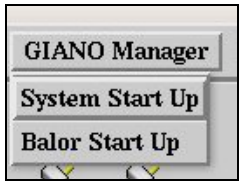

Figure 4. Giano Manager Menu

3.3.1 System Start Up

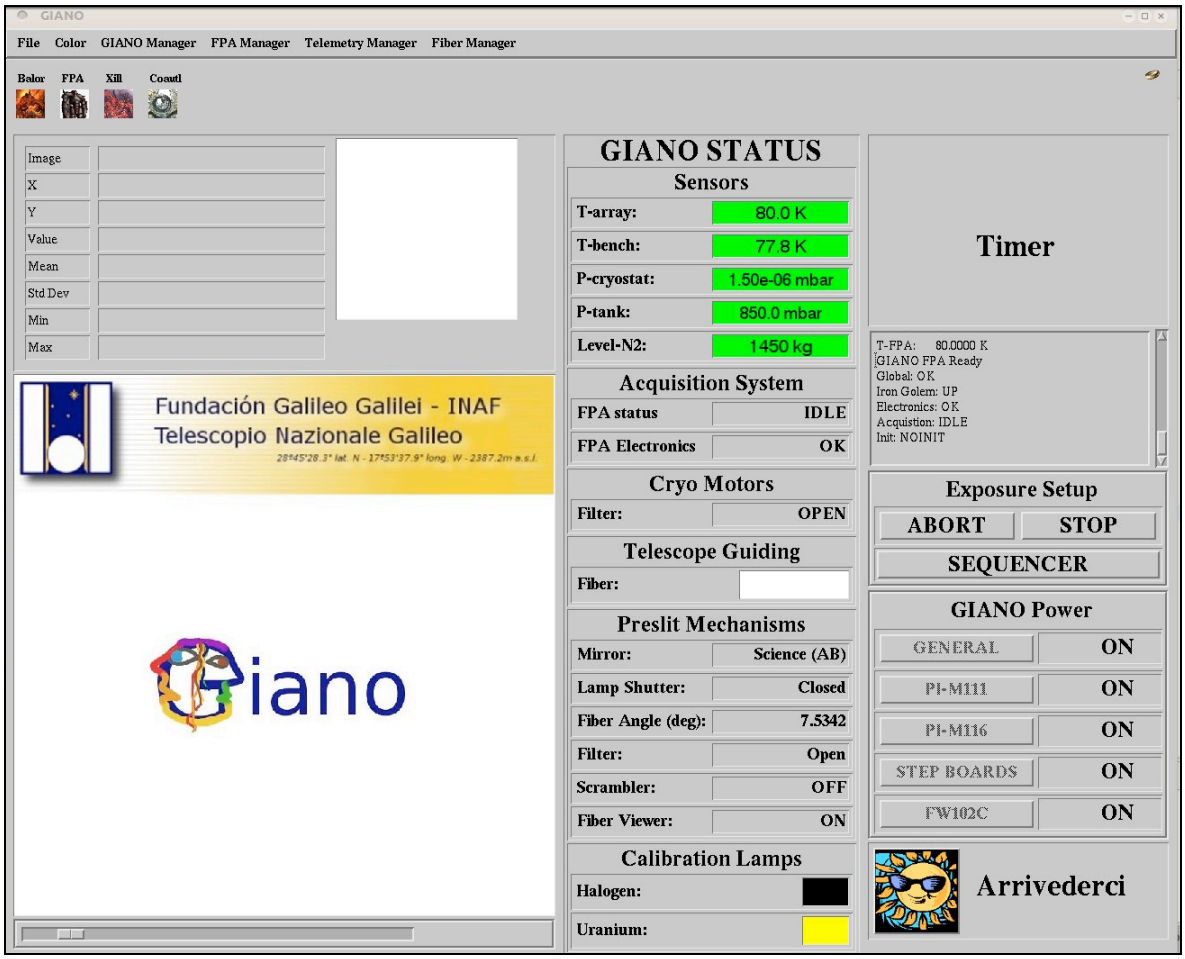

Figure 5. The main window appearence after the system startup

The System Start up button performs several operations.

- Start http cache service [REF].
- Start connection with OCS [RD1].
- Start fits service for connection to TNG archive [REF]
- Open the connection to Balor daemon [RD1].
- Open the connection to Coautl daemon [RD1] that runs the cryogenic motors.
- Open the connection to Xill daemon [RD1] that runs all the preslit systems.

- Switch on the Uranium lamp and set its level to 10% of the maximum
- Open the connection to the server104 daemon.
- Start up the FPA.
- Update the telemetry of the whole GIANO instrument.
- Check if the position of the fiber is that of maximum efficiency (stored in a file that is read when the GUI starts) and if not moves the fiber to it.

If the start up is performed correctly the GIANO Status panel (sect. 6) and the Status Icons (sect. 4) are updated as shown in Figure 5.
Any error that occurs during the system start up procedure is intercepted and displayed as text in a pop up window and in the console panel (sect. 7.2). Limited diagnostics is also given.

3.3.2 Balor Start Up

The System Start up button kill and restart the Balor daemon [RD1].

3.4 FPA Manager Menu

The FPA Manager Menu (Figure 6) is disabled in this version of the GUI.

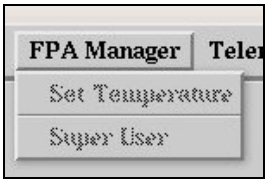

Figure 6. FPA Manager menu.

3.5 Telemetry Manager Menu

The Telemetry Manager scroll down menu allows the user to check the status of the GIANO instrument. It has 4 entries: FPA temperature, GIANO sensors telemetry, GIANO motors telemetry and GIANO Acquisition System Status

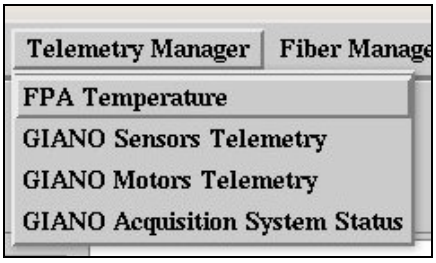

Figure 7. Telemetry manager menu

3.5.1 FPA Temperature

The FPA Temperature button updates the temperature measured on the FPA cold finger. The temperature is displayed in a panel located in the sensors status panel (sect. 6.1).

3.5.2 GIANO Sensors Telemetry

The GIANO sensors telemetry button updates the values of cryogenic-bench temperature (average of 4 PT100 temperature sensors), two pressure sensors and one weight sensor placed on the GIANO cryostat. These values are displayed in the sensor status panel (sect. 6.1).

3.5.3 GIANO Motors Telemetry

The GIANO motors telemetry updates the position of the cryogenic filter wheel, the GIANO preslit mechanisms and the calibration lamps. The information is displayed in the Cryo motor status panel (sect. 6.3) and in the Preslit Mechanisms status panel (sect. 6.5) and in the Calibration lamps status panel (sect. 6.6).

3.5.4 GIANO Acquisition System Status

The GIANO Acquisition System status button updates the status of the GIANO acquisition system, that is, the electronic boards that run the FPA. The information is displayed in the GIANO Acquisition system status panel (sect. 6.2).

3.6 Fiber Manager Menu

The Fiber Manager Menu scroll down menu allows to move the fiber at the entrance of the spectrograph. There are two buttons: Fiber Calibration and Set Fiber Position.

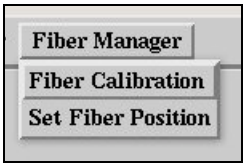

Figure 8. Fiber manager menu

3.6.1 Fiber Calibration

The Fiber Calibration button starts a calibration procedure to find the position of the fiber that maximizes the input signal in the slit of the spectrograph. The procedure is fully automatic, it moves the wheel holding the fibers by fixed steps (0.015 degrees). For each step, it takes few exposures and records the total signal inside a predefined area on the FPA. This procedure is repeated seven times. Finally it performs a Gaussian fit of the recorded signal versus the position to find the fiber position giving the maximum signal and move the wheel to that position. The new position will be displayed in the Preslit Mechanisms status panel (sect. 6.5).
The position found by the procedure is stored in a file named MaxFiberPosition.dat in the config directory under the main GIANO directory where the IDL code is placed. This means that it is possible to define the starting point of the calibration procedure changing the value stored in this file, taking into account that the procedure will subtract 0.045 degrees from the manually entered value to start.

3.6.2 Set Fiber Position

The Set Fiber Position button allows to move manually the wheel holding the fibers. Once pressed the button a window will pop up. Insert the absolute angle value in degree and press OK. The wheel will be moved to that position. The new position will be displayed in the Preslit Mechanisms status panel (sect. 6.5).

4 THE STATUS ICONS

The status icons are placed just below the scroll down menus area on the top left of the GUI. In this area a number of icons giving a snapshot of the status of the system are displayed. Starting from left to right there is the icon showing the status of Balor, Server104, Xill and Coautl daemons (see Figure 9 – Figure 13).

Figure 9. The status area as it appears after a successful system start up.

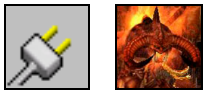

Figure 10. The icons showing the status of the Balor connection. Left icon corresponds to no connection. Right icon corresponds to Balor daemon up and running.

Figure 11. The icons showing the status of the Server104 (FPA) connection. Left icon corresponds to no connection. Right icon corresponds to Server104 daemon up and running.

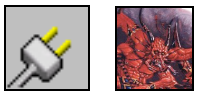

Figure 12. The icons showing the status of the Xill (Preslit) connection. Left icon corresponds to no connection. Right icon corresponds to Xill daemon up and running.

Figure 13. The icons showing the status of the Coautl (Cryo Mechanisms) connection. Left icon corresponds to no connection. Right icon corresponds to Coautl daemon up and running.

5 QUICK LOOK PANEL

The Quick Look Panel Area (Figure 14) is used to display the images obtained through the FPA and to give the user the possibility to perform a quick look analysis. It can be divided in 4 different subareas. Starting from left to right and from top to bottom:

1. Image statistics area
2. Zoomed image area
3. Main display area
4. Scrollbar

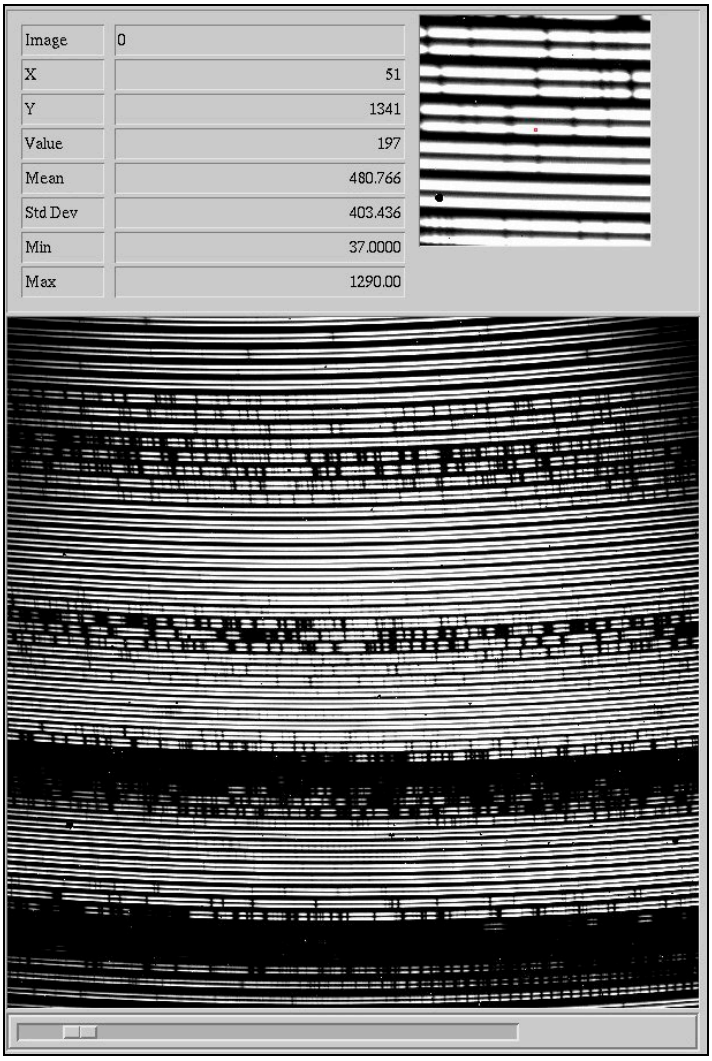

Figure 14. The Quick Look Panel Area.

In the *Image Statistics Area* a number of information about the displayed image are shown in form of table. In particular the displayed information is:

1. The name of the image
2. The X coordinate of the cursor
3. The Y coordinate of the cursor
4. The image value below the cursor
5. The average value in a 20x20 box centred on the cursor
6. The standard deviation in a 20x20 box centred on the cursor
7. The minimum value in a 20x20 box centred on the cursor
8. The maximum value in a 20x20 box centred on the cursor

This information is updated by moving the cursor inside the *Main Display Area*.

In the *Main Display Area* the last acquired detector image or the one loaded through the file menu is displayed. The full image is rescaled to a size of 800x800 pixels.

In the *Zoomed Image Area* an area of 100x100 pixels around the cursor position, magnified by a factor of two, is displayed.

Limited data analysis is available on line (quick look). A list of the implemented functions is given below. To start the analysis place the cursor on the *Main Display Area* click the left mouse button and then press one of the keys given below. After pressing the key a graphic window is drawn displaying the results of the analysis.

This is the list of the available keys and their functions:

- c – Plots the image column corresponding to the cursor position
- l – Plots the image line corresponding to the cursor position
- e – Draw a contour plot of an image subarea centred on the current cursor position.
- s – Draws a surface plot of the box centred on the current cursor position.
- h – Draws an histogram plot of the box centred around the current cursor position
- k – Performs a Gaussian fit along the detector columns around the current cursor position.
- j – Performs a Gaussian fit along the detector rows around the current cursor position
- x – Extract an order of the echelle spectrum.
- q – Deletes the graphic window.

Finally the scrollbar below the *Main Display Area* allows to change intensity and contrast of the images displayed.

5.1 The Graphic Keys

This section describes use and function of the graphic keys available in the GIANO user interface. To use the keys click with the mouse in some cases on the image display in other cases on zoomed image display and then press the corresponding letter without moving the mouse. All the keys (except the "q" key) will open a Graphic Window, that will be used afterwards to draw all the graphs created through them. To use the key again just move the mouse in a new position in the same image area and then press the key again (no mouse click necessary).

All the keys work with the mouse in the Main Display Area.
The keys are always disabled during the detector readout and during the GIANO setup.

C : The image column corresponding to the current cursor position will be plotted in the Graphic Window. The plotted column will be shown on the top of the graph (Figure 15).

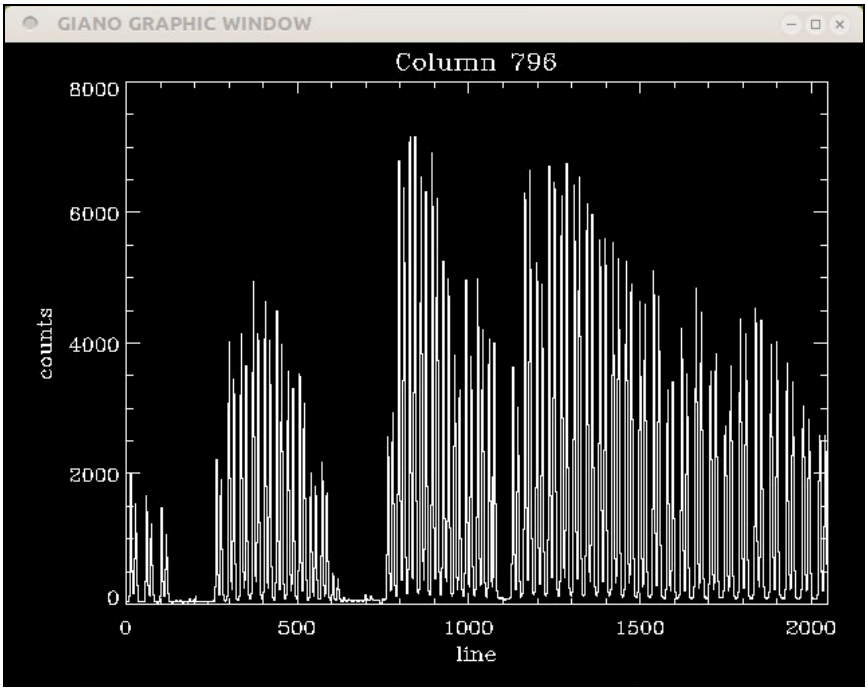

Figure 15. Column plot

l : The image line corresponding to the cursor position will be plotted in the Graphic Window. The plotted line will be shown on the top of the graph (Figure 16).

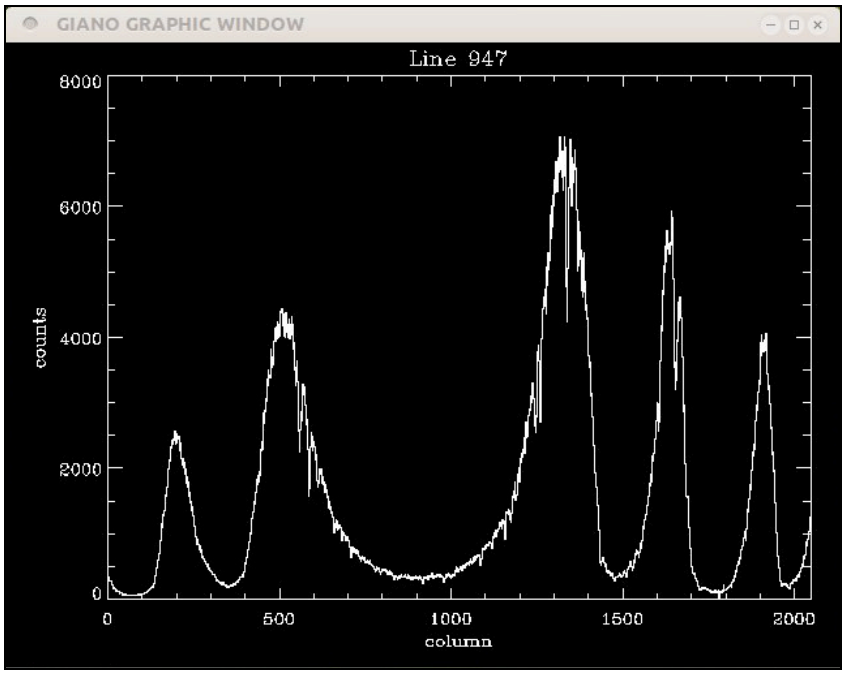

Figure 16. Line plot

e : A contour plot of the image region centred on the current box cursor position is made in the Graphic Window. The size of the contoured region is 20x20 pixels.

s : A surface plot of the image region centred on the current box cursor position is made in the Graphic Window. The size of the surfaced region is 20×20 pixels.

h : A histogram plot of the image region centred on the current box cursor position will be drawn in the Graphic Window. The size of the region is 20×20 pixels.

k : A Gaussian fit along the detector columns around the current line cursor position will be performed. A cut of the image along the columns 40 pixels long, centred around the current cursor position, will be plotted on the Graphic Window and, superimposed on it the result of the Gaussian fit. On the top left of the graph will be shown also some parameters of the fit. In particular the centre of the Gaussian along the line, its height above the background, its FWHM and the value of the background (Figure 17).

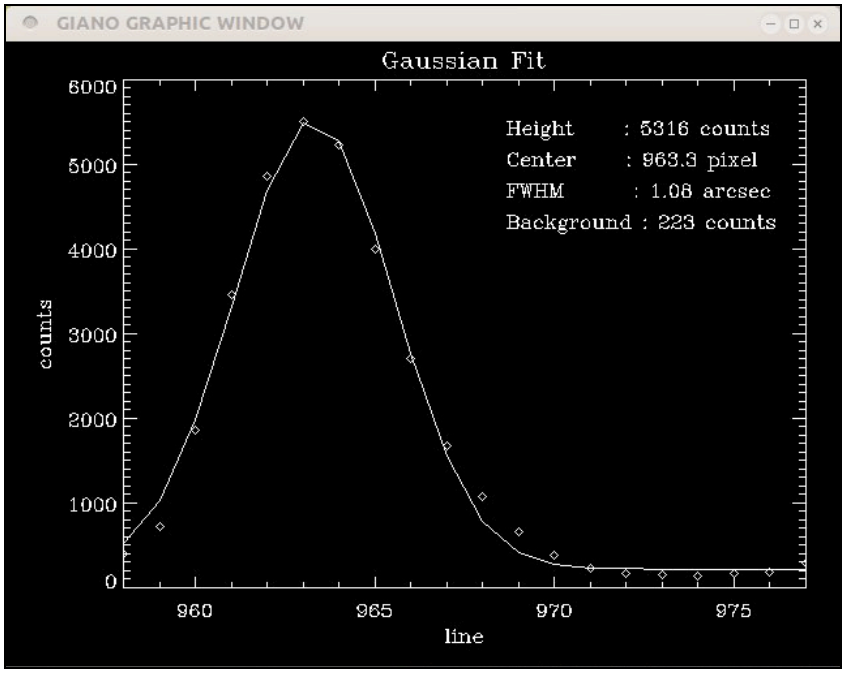

Figure 17. Gaussian fit along a column

j : A Gaussian fit along the detector lines around the current column cursor position will be performed. A cut of the image along the lines 40 pixels long, centred around the current cursor position, will be plotted on the Graphic Window and, superimposed on it the result of the Gaussian fit. On the top left of the graph will be shown also some parameters of the fit. In particular the centre of the Gaussian along the selected column, its height above the background, its FWHM and the value of the background.

x : This key performs the extraction of the echelle order.

5.1.1 Extraction of an Echelle Order

To start the procedure identify the order you want to extract in the main display area then click on the image with the left mouse button to display that area in zoomed image area, then click on the zoomed image area on the order you want to extract and press 'x'. After doing this a window will pop up asking if the observer want to use the extraction parameters used in the last extraction procedure. If the answer is 'yes' then the extraction is done automatically and the extracted order displayed (see Figure 19). If the answer is 'no' then the extraction procedure starts.

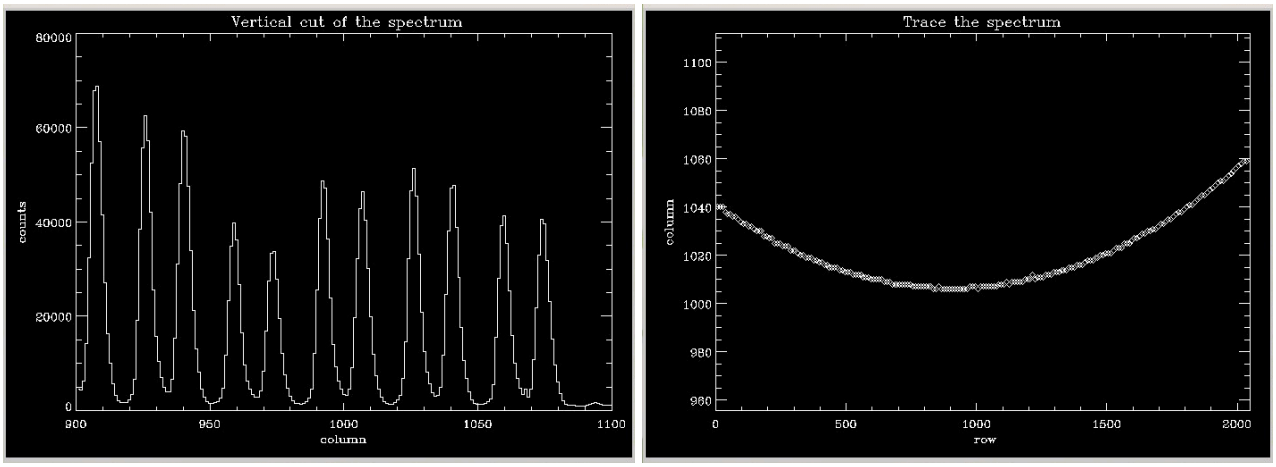

Figure 18. Left panel: horizontal cut of the echelle spectrum. Right panel the trace of the echelle order.

The steps performed by the procedure to extract the echelle order are the following:

1. Selection of the aperture corresponding to the order to extract: a graphic window showing an horizontal cut of the spectrum (across the spectral dispersion) is displayed (see Figure 18 left panel). The rows displayed are 200 and the cut is the result of adding 10 columns. The observer has to select the aperture corresponding to the order to extract by clicking first on the left side and the on the right side of it. The two x coordinates define the size of the aperture and the position of two 5 pixels wide apertures to calculate the background.
2. Trace the echelle order: the procedure trace the order throughout the FPA, then it displays the results in a graphic window (see Figure 18 right panel).
3. Fit the traced order: the observer specify the sample of points to use to fit the traced spectrum with a polynomial function.
4. Extraction of the order: the order is extracted and the results are displayed on the graphic window (see Figure 19). Along the x axis columns are displayed while on the y axis the flux in ADU is displayed.

The graphic window where the order is displayed has few functions to extract information from the spectrum. First of all moving the cursor on the window, the values corresponding to the row and the flux are displayed on the upper left corner of the window and updated continuously. Then there are some graphic keys that can be used simply pressing them while inside the window. The list of the keys in alphabetical order and their functions is the following:

- a: allow to zoom the spectrum. Press twice the key along the rows to plot the portion of the spectrum identified by the two extremes.
- e: allow to compute the equivalent width of a line. Press twice the key to define two points on the continuum (plotted then in red) to make the calculations. The results of the computation (Line centre, Equivalent width, Position of the continuum, and Flux) are displayed on the bottom of the plot.
- k: allow to compute a Gaussian fit of a line. Press twice the key to define the two extremes between which perform the fit. The Gaussian fit is superimposed on the

spectrum. The results (Line centre, Flux, Equivalent width, and FWHM) are then displayed on the bottom of the plot.

- q: quit the GIANO order extraction graphic window
- r: redraw the original extracted spectrum, no smoothing, full rows range.
- s: smooth the spectrum making an average with a box ten pixel wide.
- =: print in a PS file the plot shown in the graphic window.

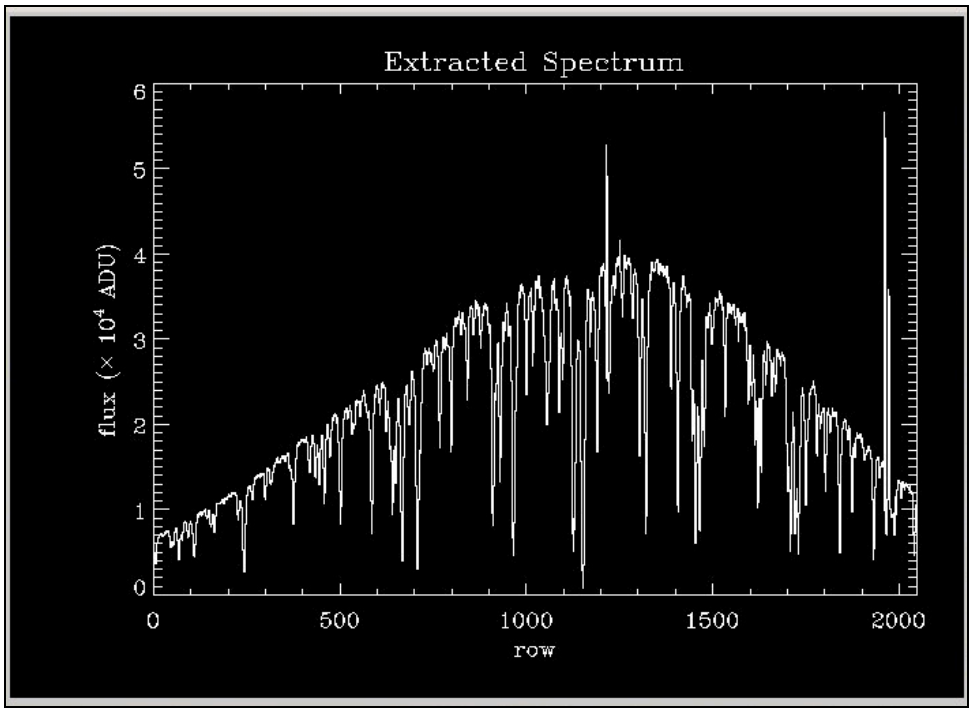

Figure 19. The extracted order

q : When pressed inside the image area this key deletes the Graphic Window.

6 THE GIANO STATUS AREA

6.1 Sensors Status Panel

This panel (see Figure 20) gives information on the temperature, the pressure and the amount of LN2 present inside the GIANO cryostat.
In particular the listed parameters are: the temperature of the FPA, the temperature of the cryogenic optical bench, the pressure inside the cryostat, the pressure inside the liquid Nitrogen tank, and the weight of the whole cryostat that, of course, depends on the amount of LN2 inside GIANO. The panel is updated both pressing the GIANO sensors telemetry button in the Telemetry Manager menu (sect. 3.5.2) and every time an operation is performed on the instrument by the GUI (i.e, moving a mechanism or starting an exposure).
Every value is shown on a coloured background. A green background indicates that the values shown are within the nominal working range, yellow background is a warning implying that some action has to be taken, finally, a red background tells that a potentially dangerous situation compromising the observations if not the instrument is present.
In particular for the FPA temperature the green background is shown when T_{FPA} < 83 K and the red background when the temperature is outside this range (FPA too cold or too warm). For the bench temperature the background is green when T < 85 K and red when the temperature is higher (lack of LN2). For the cryostat pressure there are 3 pressure ranges. When $p \leq 1x10^{-5}$ mbar the background is green, yellow when $1x10^{-5}$ mbar$< p \leq 3x10^{-5}$ mbar and red when p>$3x10^{-5}$ mbar. For the tank pressure the background is always green. Finally, for the level of LN2, the background is green when the weight is larger than 1300 kg yellow when is within 1290 kg and 1300 kg and red when is lower than 1290 kg.

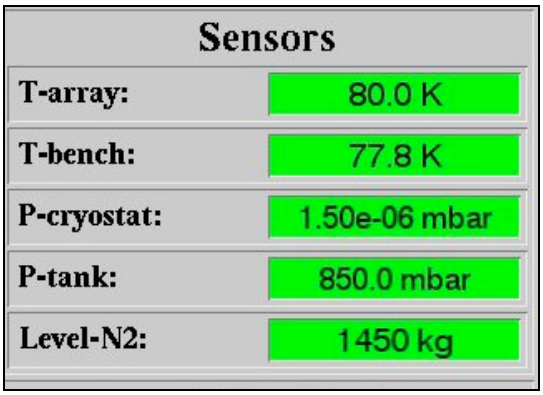

Figure 20. The detector Status Panel

6.2 Acquisition System Status Panel

The acquisition status panel gives information on the status of the FPA acquisition system. The panel is updated both pressing the GIANO acquisition system status button in the Telemetry Manager menu (sect.3.5.4) and every time an operation is performed on the instrument by the GUI (i.e, moving a mechanism or starting an exposure). There are two parameters shown the FPA status that can be IDLE (when waiting for a command) or BUSY (when exposing) and the FPA electronics which can be OK or NOTOK.

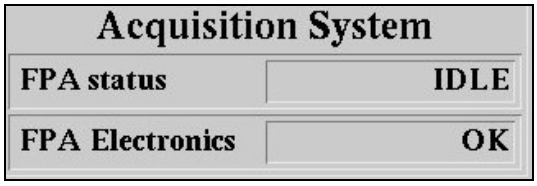

Figure 21. The LRS Status Panel

6.3 Cryo Motors Status Panel

The cryo motors status panel gives information on the status of the cryogenics motors of GIANO. The panel is updated both pressing the GIANO motors telemetry button in the Telemetry Manager menu

(sect. 3.5.3) and every time an operation is performed on the instrument by the GUI (i.e, moving a mechanism or starting an exposure). There is only one cryogenic mechanism inside GIANO, namely the filter wheel. The wheel can have 4 positions: OPEN, CLOSED, GRAY5, GRAY10. Usually the filter wheel is in the OPEN position. CLOSED position is used for dark exposures.

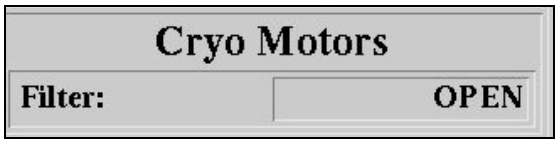

Figure 22. The Cursor Manager Panel

6.4 Telescope Guiding Status Panel

The Telescope Guiding Status panel tells the observer on which fiber the telescope is guiding. This field is managed by the autoguide program (the fiber selection cannot be done by the GIANO GUI) and is updated when exposing. There are three possible values: UNKWOWN, when the no observation has yet been performed, and then A or B indicating that the telescope is guiding on the A or B fiber.

Figure 23. The Telescope Guiding Status Panel

6.5 Preslit Status Panel

The Preslit Mechanisms status panel gives information on the status of the mechanisms of the GIANO preslit. The panel is updated both pressing the GIANO motors telemetry button in the Telemetry Manager menu (sect. 3.5.3) and every time an operation is performed on the instrument by the GUI (i.e, moving a mechanism or starting an exposure).

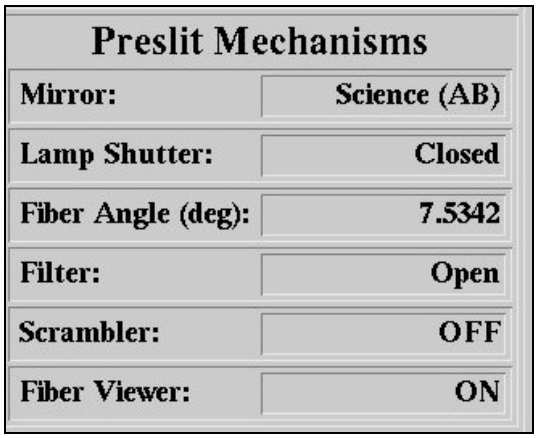

Figure 24. The Preslit Mechanisms status panel.

There are six mechanisms monitored:

1. Exposure mode selection mirror. It can have three positions, Science (AB), Science+Calib (AC), Calibration (CC).
2. Lamp shutter. It can have two positions, Open or Closed
3. Wheel holding the fibers before the spectrograph's slit. The value shown is the position of the wheel in degrees.
4. Lamp filter wheel. It can have six different position, Open, ND-0.8, ND-1.4, ND-2.5, ND-4.1, Closed.
5. Scrambler mechanism. It can be ON or OFF

6. Fiber viewer. This is the CCD camera used for guiding. It is managed by the autoguide system. It can be ON or OFF.

6.6 Calibration Lamps Status Panel

The Calibration Lamps status panel gives information on the status of the calibration lamps of GIANO. The panel is updated both pressing the GIANO motors telemetry button in the Telemetry Manager menu (sect. 3.5.3) and every time an operation is performed on the instrument by the GUI (i.e, moving a mechanism or starting an exposure).

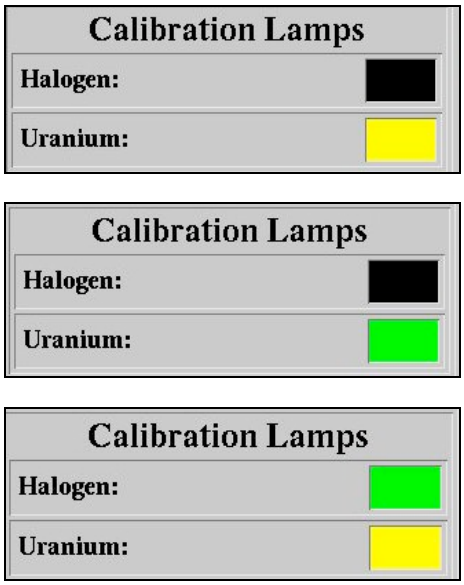

Figure 25. The Calibration Lamp Status Panel

The three possible configurations are shown in Figure 25.

1. The Halogen lamp Off and the Uranium lamp On and set to a level that is 10% of the maximum. In this case (see top panel of Figure 25) the colour of the square corresponding to the Halogen lamp is black while the one corresponding to the uranium lamp is yellow.
2. The Halogen lamp is Off and the Uranium lamp is On at full power. In this case (see central panel of Figure 25) the colour of the square corresponding to the Halogen lamp is black while the one corresponding to the uranium lamp is green.
3. The Halogen lamp is On and the Uranium lamp On and set to a level that is 10% of the maximum. In this case (see top panel of Figure 25) the colour of the square corresponding to the Halogen lamp is green while the one corresponding to the uranium lamp is yellow.

Note that once the system has been started up the Uranium lamp is always on either at full power or at 10% of full power. The Uranium lamp is completely switched off only when exiting the GUI.

7 THE EXPOSURE CONTROL AREA

7.1 TIMER PANEL

This panel gives information on the status of the exposure. When exposing the panel (Figure 26, left panel) will display "Exposing FPA" the number of the exposure in the exposure sequence and, if there is more than one group of sequences, the group number. On top of the panel it is shown if the exposure is in a nodding sequence or if the exposure belongs to a group of active sequence of exposure selected through the sequencer (sect. 7.3.3). On the bottom of the panel there is a timer giving the time to the end of the exposure. When the exposure is ended and the FPA is being read out the panel will display "Reading Image" with the time elapsed since the start of this operation (Figure 26, center panel). When all the sequences are over on the panel will be written "Done" (Figure 26, right panel).
Also before starting an exposure if the instrument configuration is changing then the panel will display: "GIANO Set Up Please Wait…".

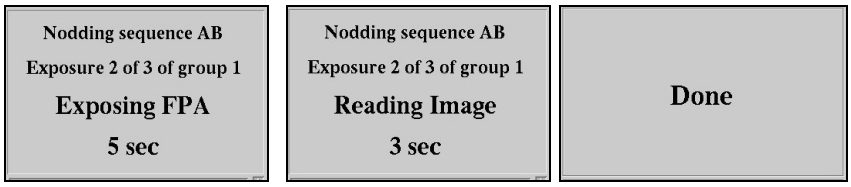

Figure 26. Some of the information displayed in the timer panel

7.2 CONSOLE PANEL

Each time a command or a group of commands is issued by the GUI to the system a message, describing the type of command and the time it started, is written to the console panel. When the command is executed a new line is written to the console stating that the command was completed and the time when that happened. Many other informative, warning, and error messages are displayed in the console as shown, for example, in Figure 27.

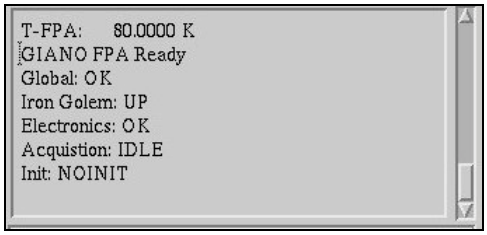

Figure 27. The console panel.

7.3 EXPOSURE SETUP PANEL

This panel contains three buttons: Abort, Stop and Sequencer button.

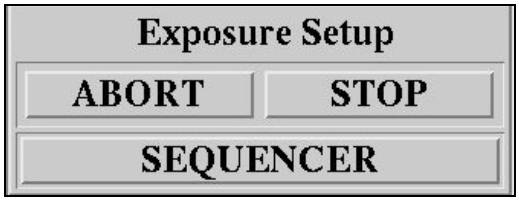

Figure 28. The Exposure Setup Panel

7.3.1 ABORT

The *ABORT* button immediately aborts the current exposure, the image is not read out. If the exposure was part of a sequence then the sequence is aborted.
This button is active ALSO when the sequencer panel is open.

7.3.2 STOP

The *STOP* button immediately stops the current exposure and the detector image is read out. If the exposure was part of a sequence then the sequence is aborted.
This button is active ALSO when the sequencer panel is open.

7.3.3 The Sequencer Panel

The sequencer button is used to start the sequencer panel. When pressed it opens the window shown in Figure 29.

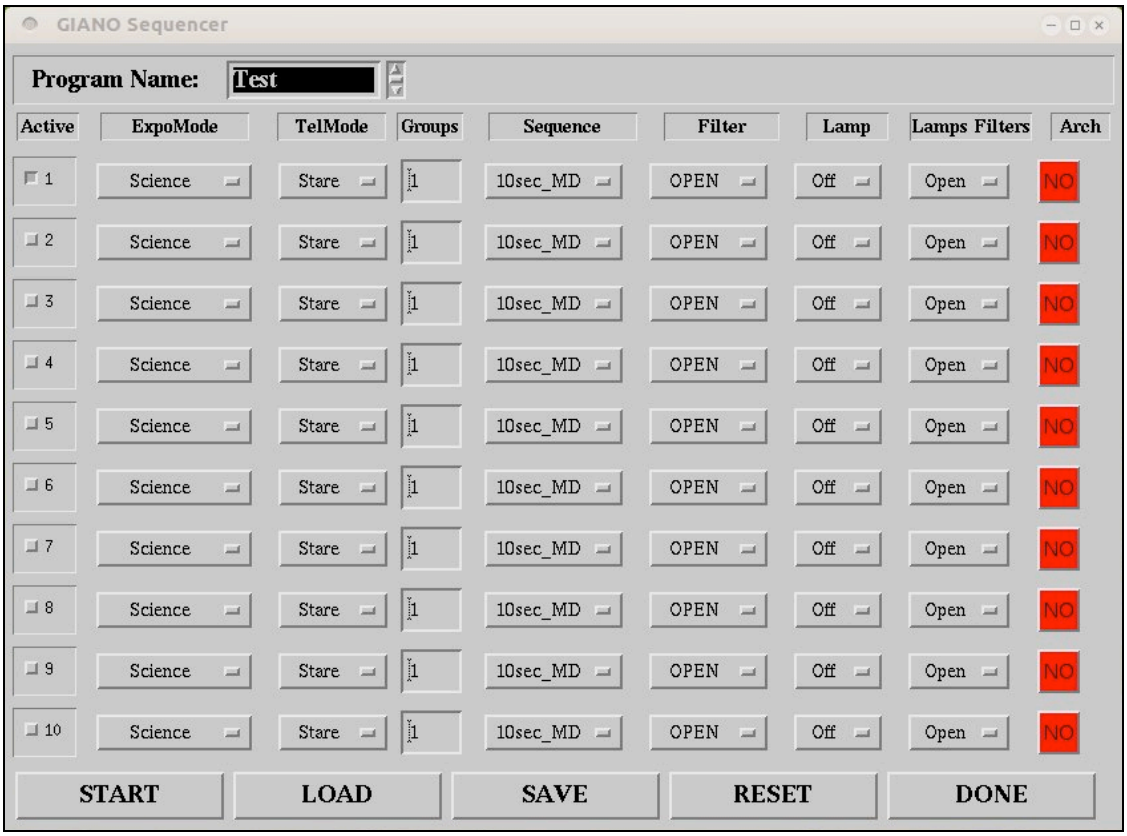

Figure 29. The Sequencer panel

The function of the sequencer panel is to manage exposures and instrument's setup. The main body has ten rows then on the bottom of it there are 5 buttons and on the top a widget list.
The widget list contains the name of the all observational programs active in that moment at the TNG. If none of them is selected then the default name is "Test". The buttons on the bottom will be described in the next subsections (7.3.3.1 and following).

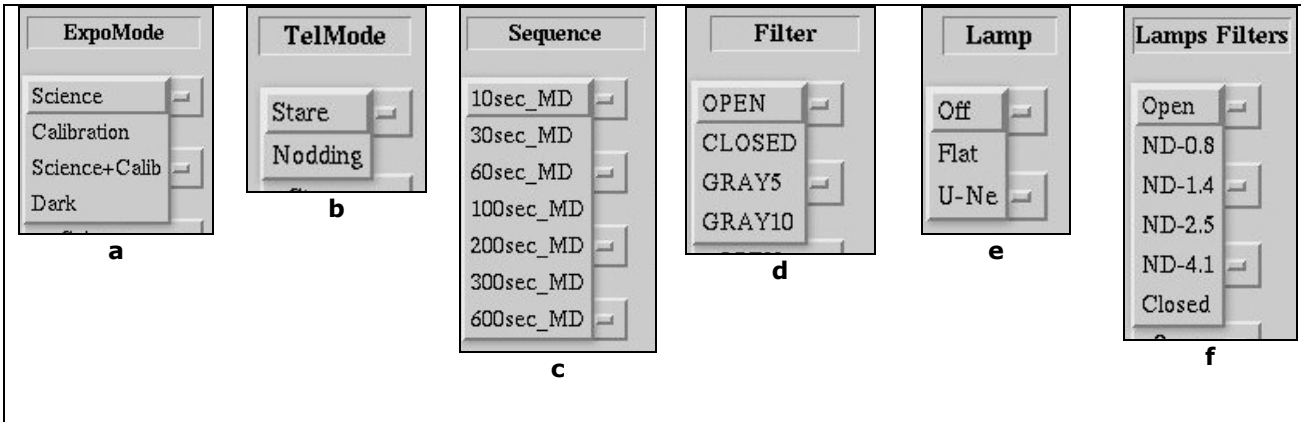

Figure 30. The scroll down menus in the sequencer panel

Each row in the main body has nine columns that can be buttons, scroll down menus, text widgets that allow the observer to set up an exposure.
In the first column there is a toggle button that activates the row (sequence). Only activated sequences will be executed. If no sequence is active a warning message will pop up. The second column is a scroll down menu that allows to select the exposure mode. Currently there are four exposure modes available: Science, Calibration, Science + Calibration, Dark (Figure 30a). In the science mode one of the fibers is pointed at the target object while the second one looks at the sky. In the calibration mode both fibers are illuminated by one of the lamps. In the Science + Calibration mode one of the fibers is pointed at the target object while the second fiber is illuminated by one of the calibration lamps. Finally the Dark mode is self explanatory. In the third column there is a scroll down menu to select the telescope operation mode. There are two modes available: Stare and Nodding (Figure 30b). In the stare mode the telescope keeps the target object on one fiber. In the nodding mode the telescope switches from one fiber to the other and back to the one it started from. In the nodding mode the active sequence is repeated twice for each of the two fibers. In the fourth column the observer can write the number of times (groups) the active sequence is repeated. In the fifth column (Figure 30c), the observer can select the desired exposure sequence. There are seven exposure sequences. They are all multiple non-destructive modes with increasing exposure times from 10 to 600 seconds. The sixth column (Figure 30d) there is a scroll down menu to select the desired cryogenic filter. Four choices are possible: OPEN, CLOSED, GRAY5, GRAY10. Seventh and eighth columns are two menus to set up the calibration lamps (Figure 30 e/f). The first one allows the selection of the lamp: Off, Flat and U-Ne the choices available; and the second one allows to introduce a neutral density filter in front of one of the two lamps. Six choices are possible: Open, ND-0.8, ND-1.4, ND-2.5, ND-4.1, Closed. The last column contains a button that allows to send the sequence of images to the TNG archive.

7.3.3.1 START

The *START* button will execute sequentially all the activated sequences. In case any incongruence is found, either a warning is issued or automatically the interface corrects it. In case of a warning issue, a window displaying a message explaining the reason for the warning pops up. If the observer decides to ignore the warning, then the sequence is started, otherwise the procedure returns to allow the observer to remove the cause of the warning.

7.3.3.2 LOAD

The *LOAD* button allows the observer to retrieve a given sequencer configuration.

7.3.3.3 SAVE

The *SAVE* button allows the observer to save a given sequencer configuration.

7.3.3.4 RESET

The *RESET* button will reset the scroll down menus and editable text fields and the buttons to their default values.

7.3.3.5 DONE

The *DONE* button closes the sequencer panel.

7.4 EXIT PANEL

The exit panel contains a button to exit the GUI. There are two other ways to exit the interface: one is exit button in the File Menu (sect. 3.1.3), the other one using the window manager.

Figure 31. The exit panel