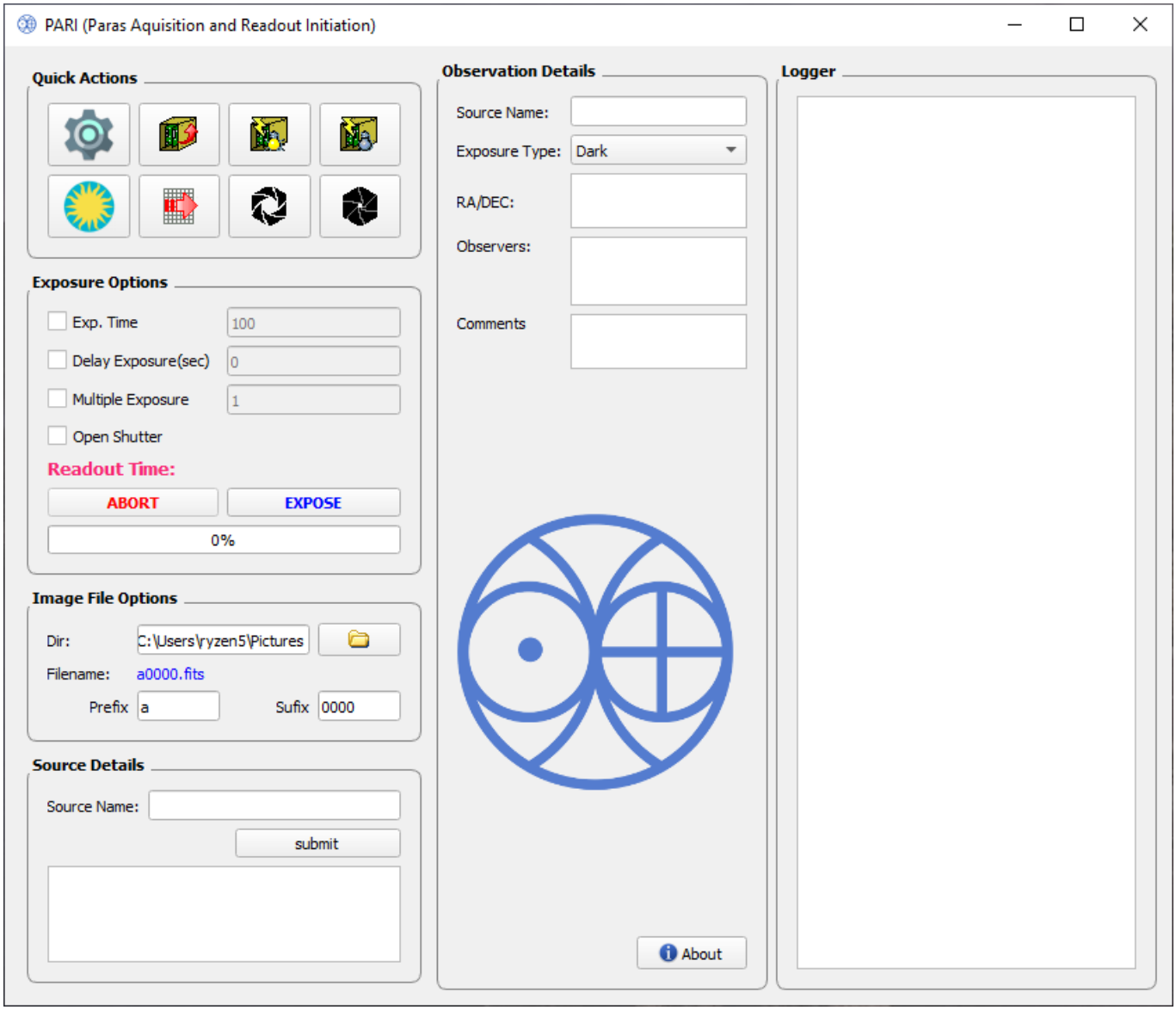


PARAS2 Aquisition and Readout Initiation (PARI)

Manual V1.0

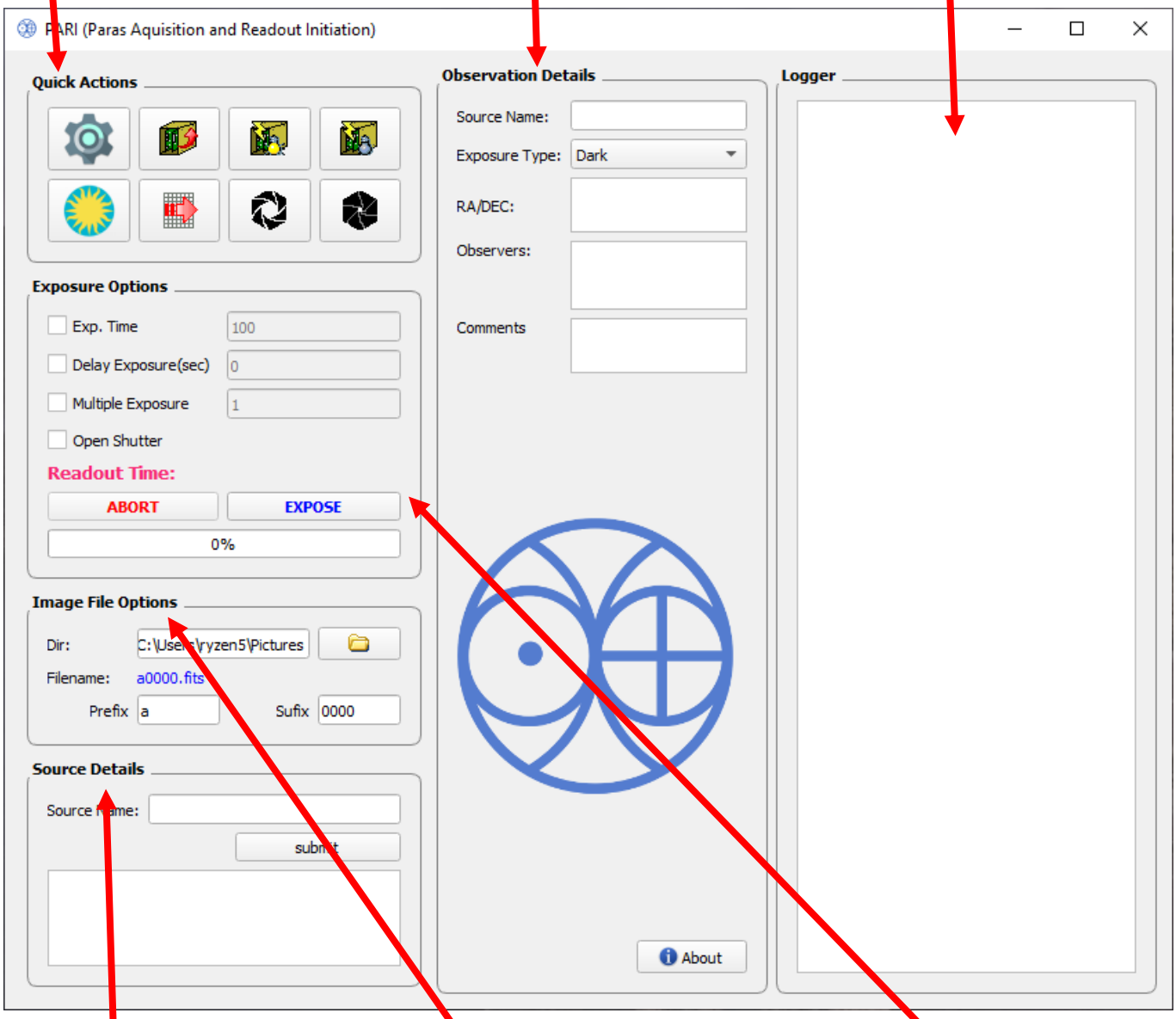
Index

1. GUI Anatomy

Details filled here goes into the header of fits file.

Quick Actions panel contains fcuntion CCD controller related functions like power-on, power-off, setup-controller etc.

This window shows vaious updates and messages during th run cycle of the software.



RA/DEC of target can be fetch from internet using its TOI name in this panel.

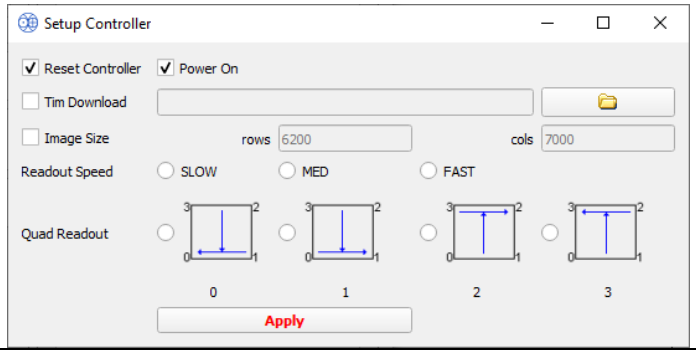
In this panel you can set filename name and directory where the fits file will be saved.

Exposure options like exposure time, delay, shutter etc. can be configured through this panel.

To start/ abort exposure two buttons are available here.

2. Quick Action Panel

class PARI has the following functions to support functionality for the Quick Action Panel.

function	description
`setup_dialog()`	loads the tim.lod file to the controller and configures parameters as shown in image below. 
`reset_controller()`	resets the controller.
`power_on_controller()`	Powers the controller on.
`power_off_controller()`	Powers the controller off
`ds9_process()`	Opens DS9 fits viewer.
`btn_clr_array()`	Clears camera array.
`open_shutter()`	Opens the CCD shutter.
`close_shutter()`	Closes the CCD shutter.

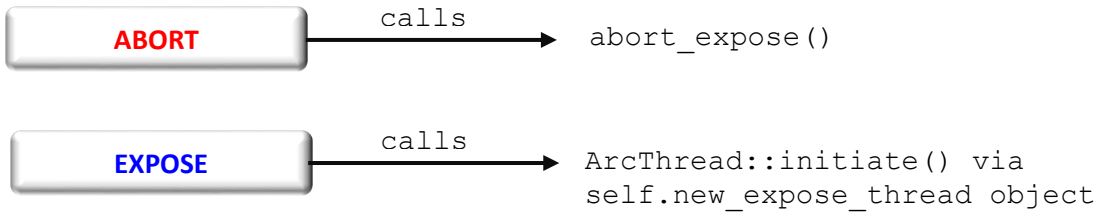
All above functions uses the Wrapper class ArcWrapper as interface between GUI and ARCAPI.

Table below shows which function of ArcWrapper is called respectively.

function	Function called in ArcWrapper
`setup_dialog()`	`ArcWrapper:: apply_setup()`
`reset_controller()`	`ArcWrapper:: reset_controller()`
`power_on_controller()`	`ArcWrapper:: poweron()`
`power_off_controller()`	`ArcWrapper:: poweroff()`

btn_clr_array()	ArcWrapper:: clear_camera_array()
open_shutter()	ArcWrapper:: open_shutter()
close_shutter()	ArcWrapper:: close_shutter()

3. Exposure Options Panel



ABORT and **EXPOSE** buttons calls function as shown in illustraion above.

function	description
`abort_expose()`	Creates a file named exposure.dat. This file is constantly checked ARCAPI thread, whenever during an exposure this file is found the ARCAPI thread aborts the exposure. Before starting exposure this file gets remove by start_expose().
`ArcThread::initiate()`	Start the ARCAPI exposure thread with passed parameters.

4. Image File Options Panel

You can select the output directory and filename in this panel.

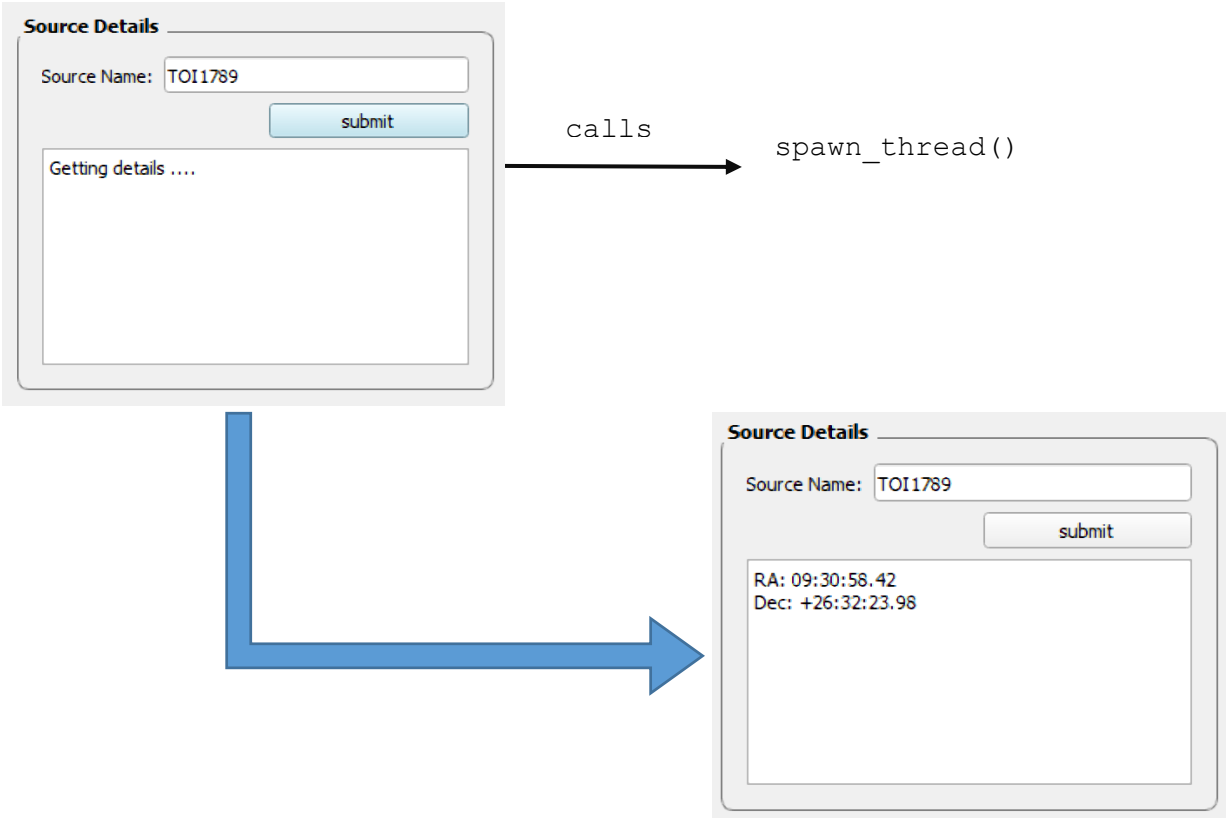
function	description
`img_file_options()`	Sets the output directory for saving the fits file. Uses QfileDialog().

Input Fields prefix and suffix are validates using QregExpValidator and QintValidator as shown below

```
self.input_img_prefix.setValidator(QRegExpValidator(QRegExp("\w*")))
self.input_img_suffix.setValidator(QIntValidator())
```

5. Source Details Panel

You can search RA/DEC of target using this panel. Just enter TOI ID and click submit as show in image below:



When submit is clicked it calls the `spawn_thread()` as shown below:

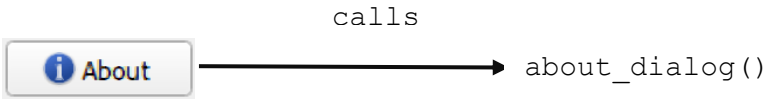
```
self.spawn_thread(self.get_src_info, None, self.set_src_info))
```

function	description
`spawn_thread()`	Takes 3 arguments 1. fn_name : a function which will be run in thread 2. fn_progress : a function that will perform UI updates during execution of thread 3. fn_result_handler : a functions which will run after thread completion.
`get_src_info()`	Calls tess_api.get_planet_data() from modules/tess_api.py.
`set_src_info()`	sets the view field with the output.

6. **Observation Details Panel**

Following input fields will be added to the fits image.

Input Field	Description
Source Name	Source name or target object name eg. TOI1789
Exposure Type	Type of the exposure from the following values: Dark Dark+Tung Tung+Dark UAr+UAr UAr+Dark Dark+UAr ThAr+ThAr Dark+ThAr Star+UAr Star+ThAr Star+Dark
RA/DEC	RA (right ascension) and Dec (declination) of the target object.
Observers	Name of the observers who took the observations.
Comment	Any comments.



function	description
about_dialog()	Opens a QmessageBox() with a message.

7. **Logger Panel**

Displays various messages and info during the run life-cycle of the software. It uses the `log()` of the PARI class.

function	description
`log()`	Updates the logger windows using functions call `self.txt_logger.textCursor().insertHtml()`

8. Exposure cycle diagram