SILMARIL Software Description

Narsireddy Anugu, 2023 July 3

Currently SILMARIL has three servers:

1. **silmaril_cred2** – talks to the cred2 camera and puts the frames into a shared memory.
2. **silmaril_server** – reads the shared memory written by the **silmaril_cred2** server and does the image processing such as FFTs and group delay tracking (gdt), the same as in mircx.
3. **silmaril_ddl_server** – talks to the zaber internal differential delay lines (ddl).
4. **silmaril_super_server** – manages data sequence
5. **silmaril_pico_server** – to align the beams

These servers can start as a **silmaril_bootLaunch** script. Servers are running on the observe@silmaril (observe@192.168.3.19) computer. The server logs are saved at /localog/

```
(base) spooler@silmaril:~$ silmaril_bootLaunch

Machine name is *** silmaril ***

Do wish to kill all and restart all Y/[N]?
*** silmaril *** Checking for dead servers and restart if any
---
silmaril_ddl_server is already running on spooler@silmaril
---
SILMARIL_PICO is already running on spooler@silmaril
---
silmaril_cred2 is already running on spooler@silmaril
Wait for 6s
---
silmaril_server is already running on spooler@silmaril
---
silmaril_super is already running on spooler@silmaril
---
All servers started, wait for 5s to register hardware...
... ready!
python: no process found
rsync: no process found
Check CPU usage on the machine
********
WARNING:  /usr/local/bin/silmaril_cred2 70.6 % of CPU
/usr/local/bin/silmaril_cred2
********
(standard_in) 1: syntax error
(base) spooler@silmaril:~$
```

We have 5 GTK GUIs:

All GUIs can be opened with silmaril_launch_all_guis

1. **silmaril_cred2_gtk** -- directly talks to the **silmaril_cred2** server.
2. **silmaril_server_gtk**, **silmaril_rtd_gtk** and **silmaril_gdt_gtk** they talk to the **silmaril_server**.
3. **silmaril_ddl_gtk** talks to the **silmaril_ddl_server,** intended for the usage of engineering
4. **silmaril_super_gtk** – to take data
5. **picogtk SILMARIL_PICO** – to align

The GUIs are installed on the remote VNC **altair** machine.

These have the same definition as mircx.

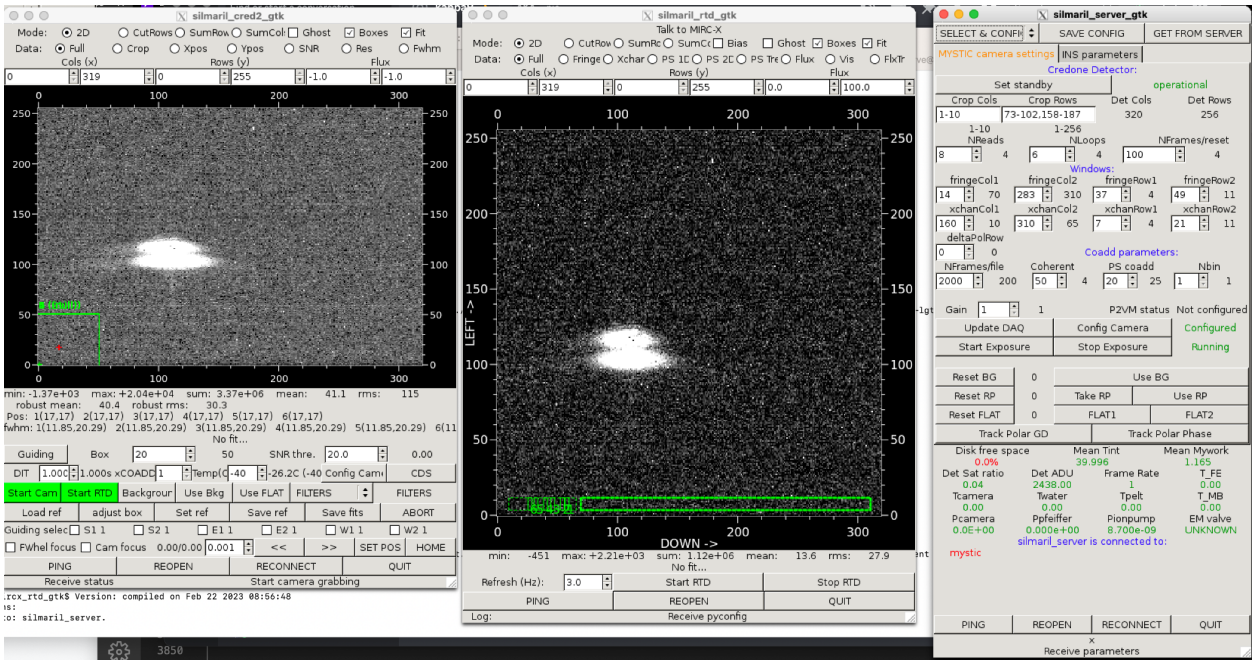


Fig: silmaril_cred2_gtk, silmaril_rtd_gtk, silmaril_server_gtk

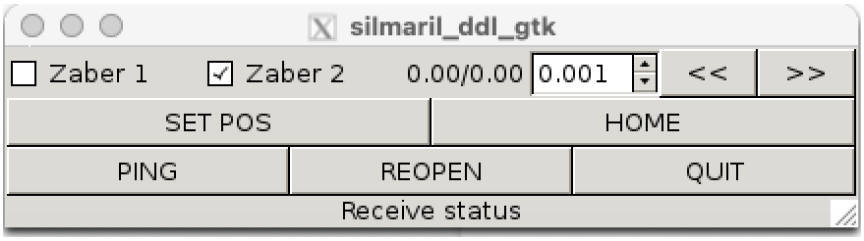


Fig: silmaril_ddl_gtk

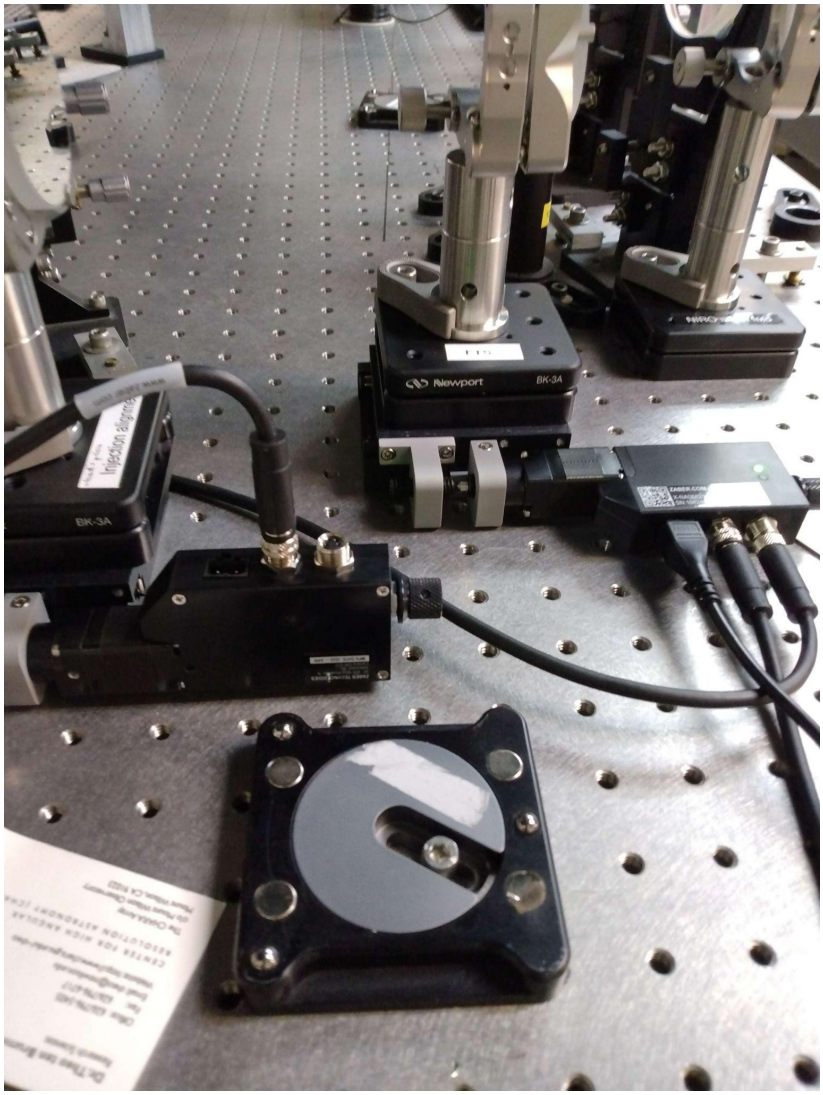
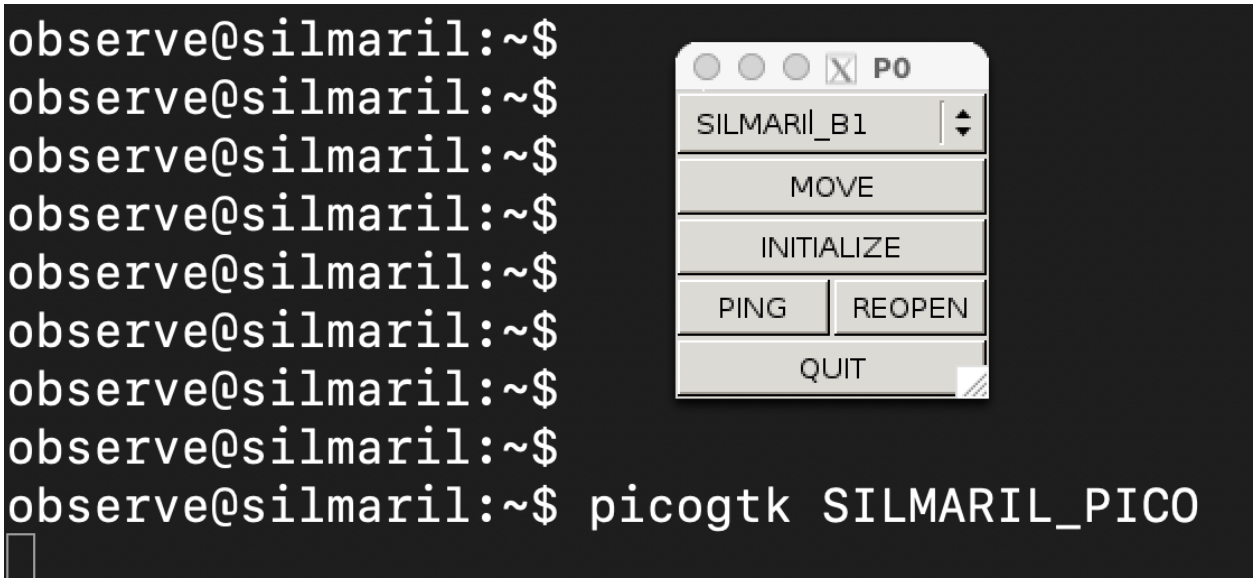


Fig: Zaber internal differential delay lines hardware


observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$
observe@silmaril:~$ picogtk SILMARIL_PICO
P0
SILMARIL_B1
MOVE
INITIALIZE
PING
REOPEN
QUIT

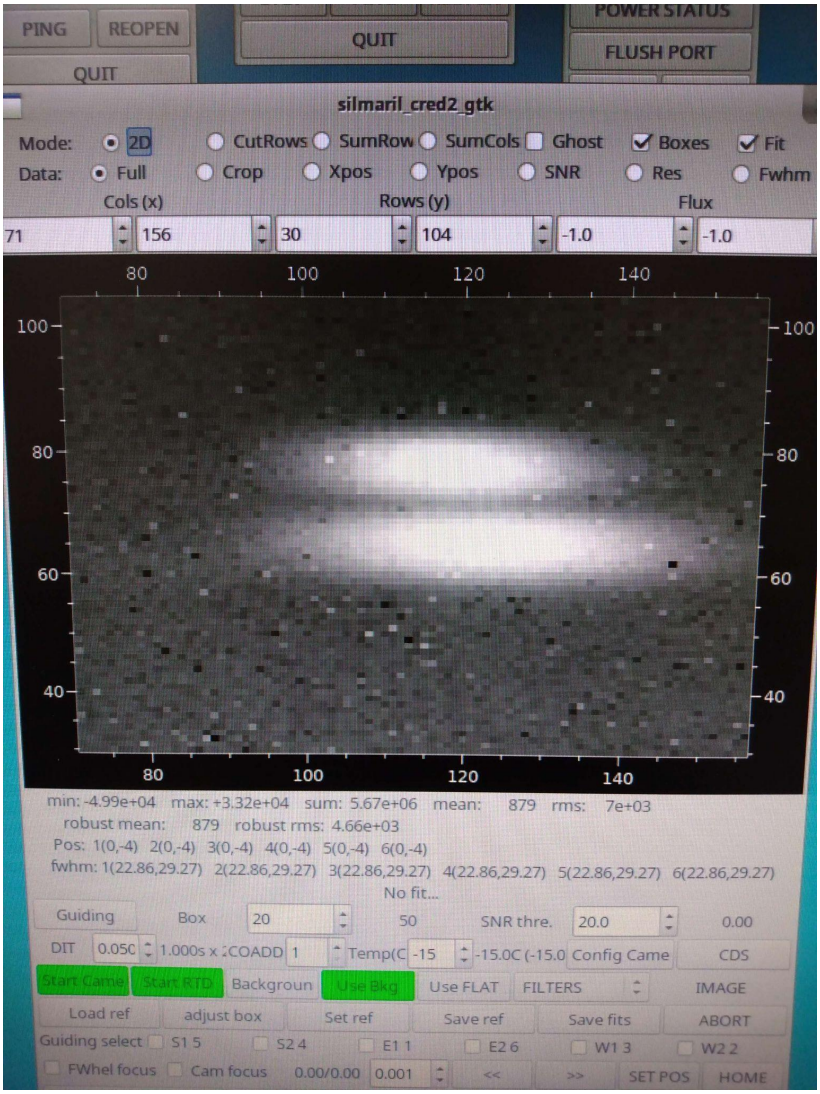


Fig: The frame recorded of beam1. Y-axis is the spectral direction. X-axis is the spatial direction. The dark line in the spectrum is because of the Notch filter of blocking metrology wavelength.

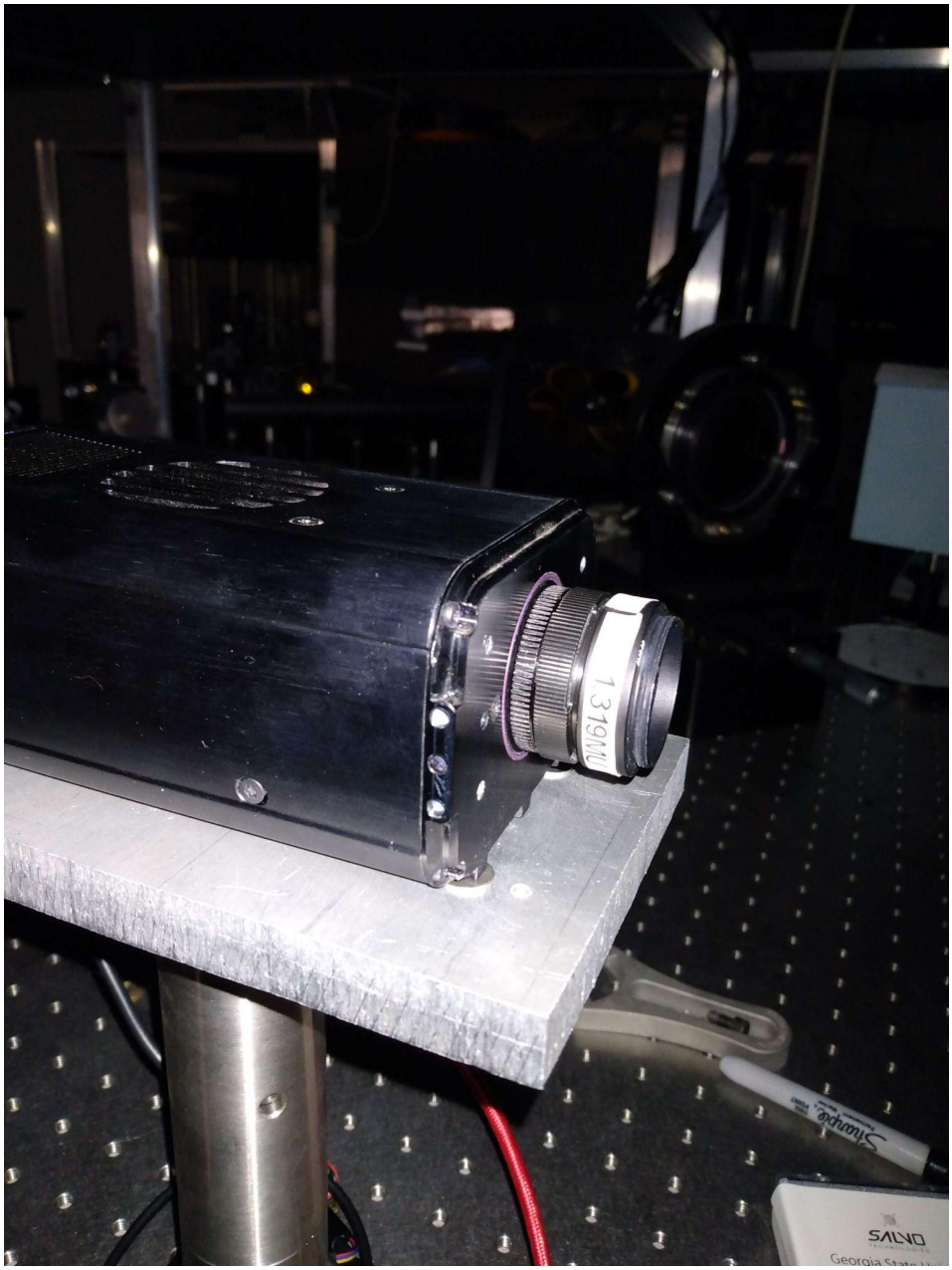
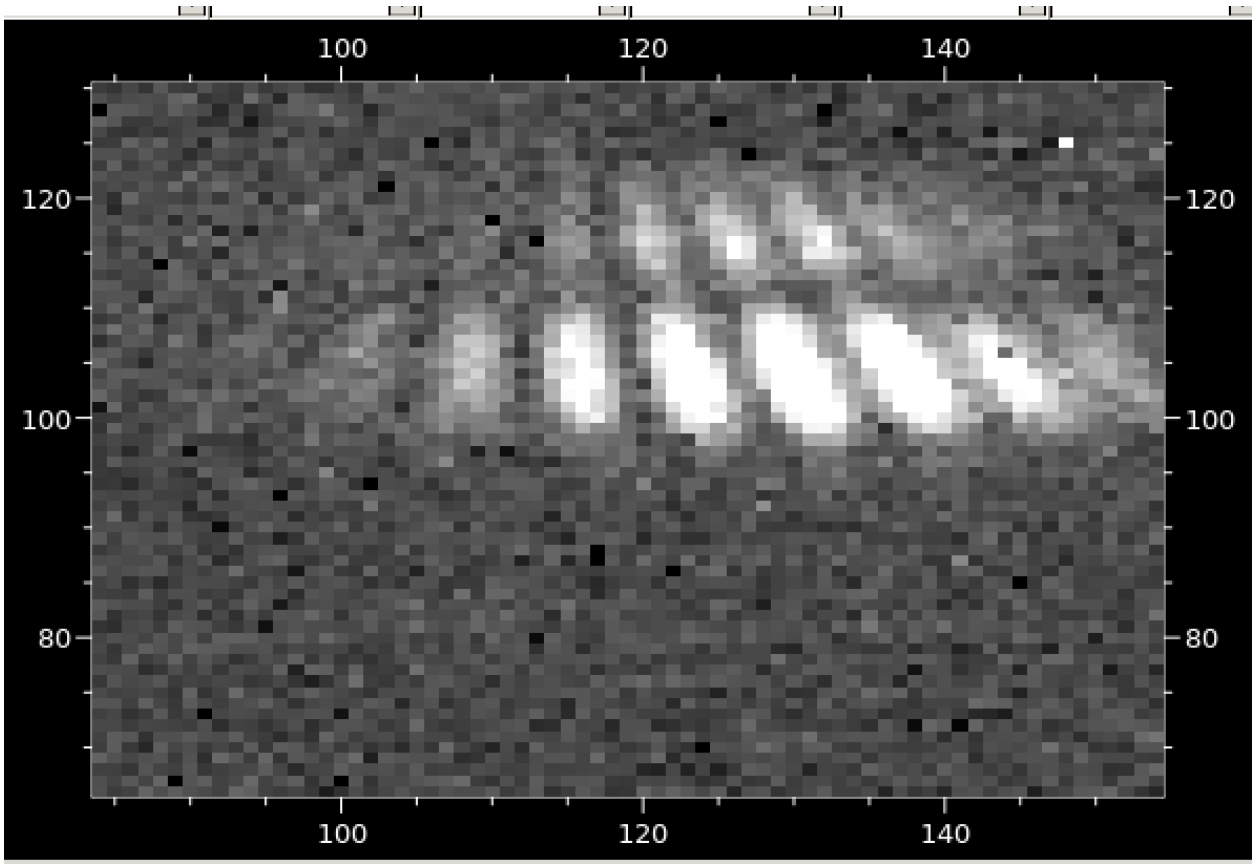


Fig: Cred2 camera with Notch filter installation at the entrance



Beam1 and 2 (Zaber1 18.00, zaber2 11.44)