

# README Pulse GUI

This document explains how to operate the pulse GUI (=Graphical User Interface) on the measurement computer sron1730.

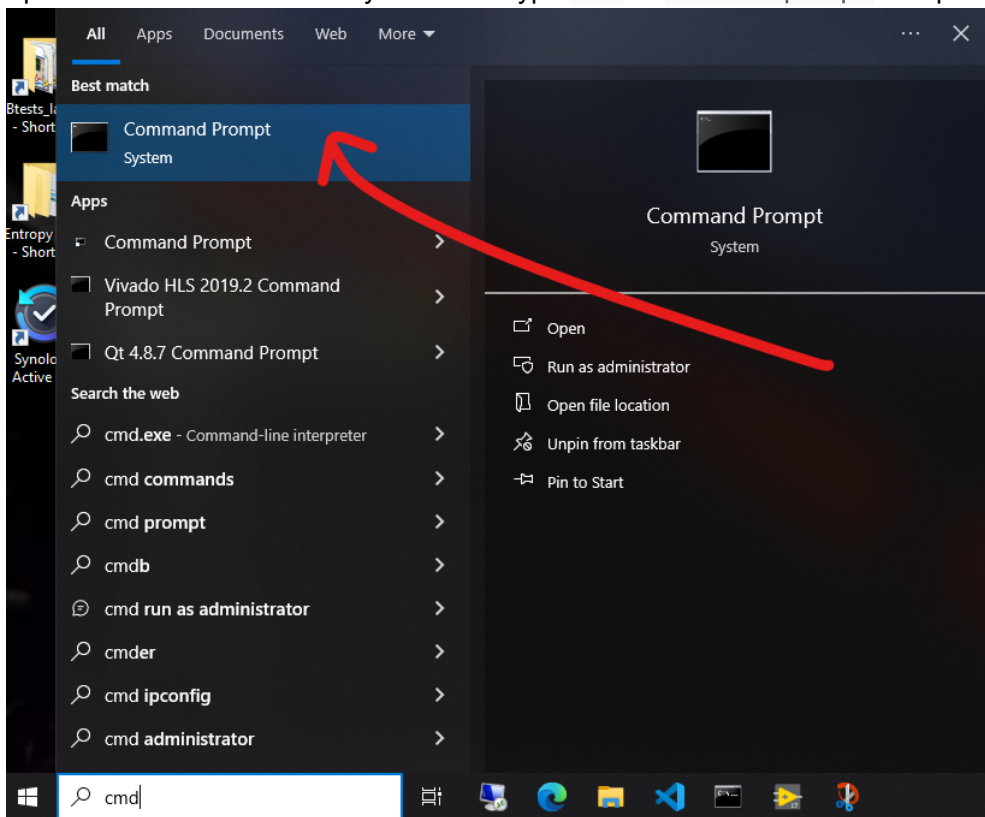
The purpose of the GUI is to easily analyze data as soon as it is measured. There will be no need anymore to copy the data for the URSA drive.

## Content

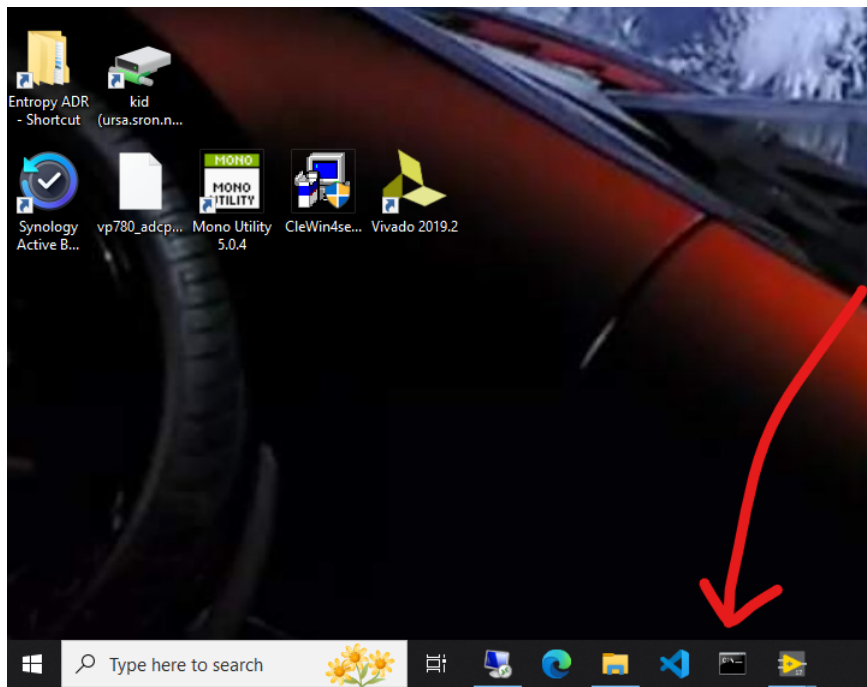
1. How to activate the GUI
2. How to operate the GUI
3. GUI Settings explained
4. How to add your own GUI (to be implemented)

## 1. How to activate the GUI

1. open a command prompt
  - press windows button on keyboard and type `cmd` or `command prompt` and press enter

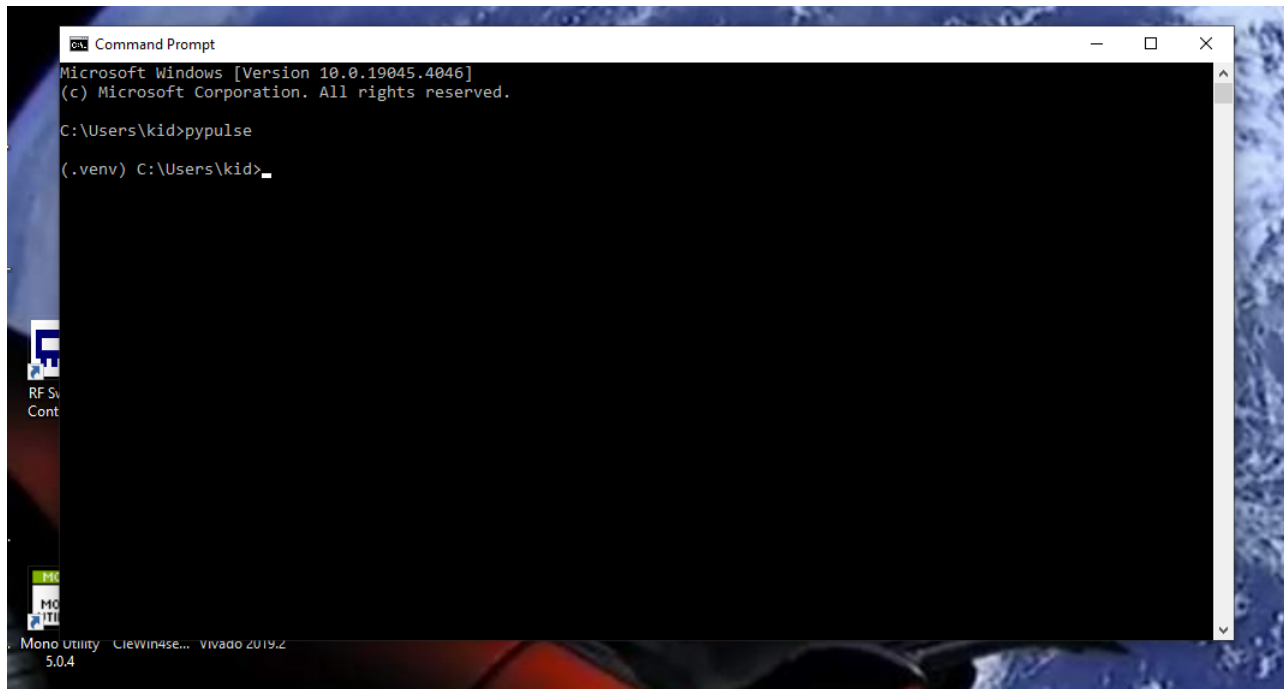


- or find the shortcut on the taskbar



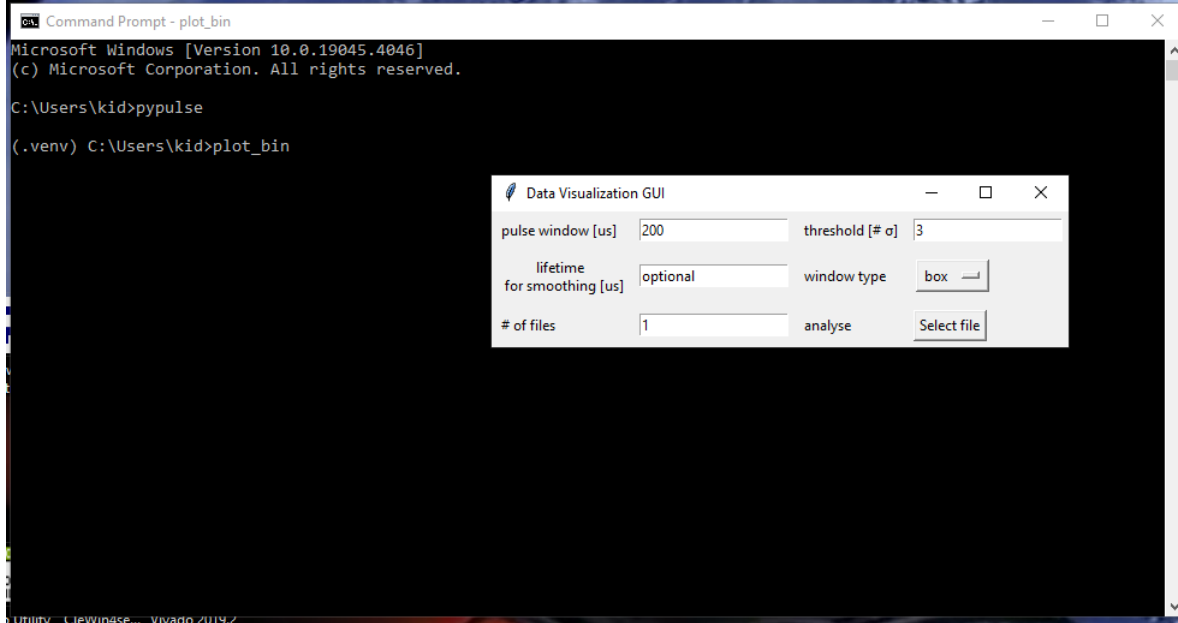
2. activate the virtual environment for the GUI called `pypulse`

- type `plot_bin` and press enter. `(.venv)` should now have appeared in front indicating that the python environment is activated



3. run the GUI called `plot_bin`

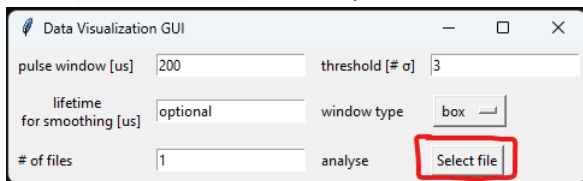
- type `plot_bin` and press enter. A small window `Data Visualization GUI` should now appear



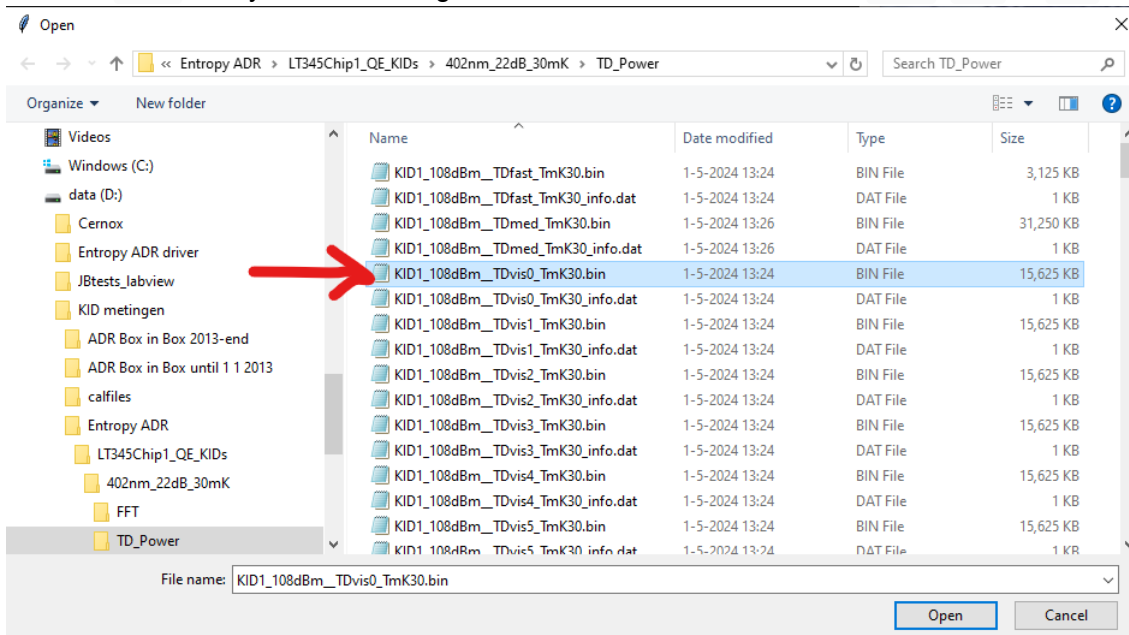
## 2. How to operate the GUI

When the GUI is activated a window appears with some basic settings. These settings are explained in the *Settings* section. First we give an example.

1. Click `select file`, a file explorer window will open.

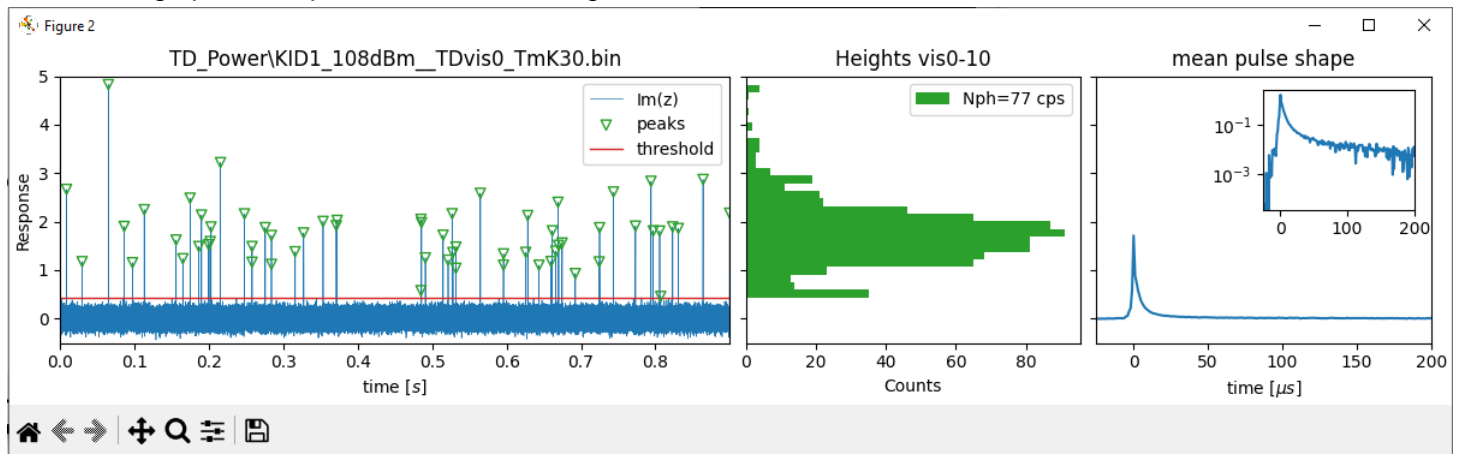


2. Select a `.bin` file by double clicking on the file. This can be either the `fast`, `med` or `vis` files.



3. A window appears with three plots:
  1. a 1 sec timestream with the detected peaks
  2. a peak height histogram with the  $N_{ph}$  indicated

3. the average pulse shape in linear and semilog.



### 3. GUI Settings explained

`pulse window`

Sets the length of the pulse window in  $\mu s$

**input :** empty, 0 or any positive integer

**default :** 200

`threshold:`

Sets the threshold for pulse detection in units of standard deviations from the input signal. Note: no pulse rejection is done when computing the standard deviation.

**input :** empty, 0 or positive integer **\*\*default :\*\*** 3`

`lifetime for smoothing`

Expected lifetime of the pulses. This used to generate a smoothing window based on the window type selected. See window type.

**input :** empty, 0 or positive integer **\*\*default :\*\*** empty`

`window type`

Select the type of window used for smoothing the data. Two options are provided in the drop down menu: `box` and `exp`

`box` : gives a rectangular window with a length equal to half the lifetime.

`exp` : gives an exponential decay window with length equal to 3 times the lifetime.

**input :** box and exp **\*\*default :\*\*** box`

`# of files`

Select the number of files used for the pulse analysis. This only works if a `vis` file is selected, else it is 1. If a value larger than 1 is given, all the vis files from 0 \*to the given number are concatenated and analyzed. If a value is given which is larger than the number of existing files the value is taken as the number of existing files.\*\*

**input :** positive integer

**default :** 1

`analyze`

This opens a file explorer where the user can select a data file. This must be a `.bin` file. However, any of the `fast`, `med` or `vis` files will work. The sample frequency is automatically obtained from the `info.dat` file that is accompanying the selected `.bin` file.

**input :** NA

**default :** NA

### 4. How to add your own GUI

coming soon