

Preparing Observation Schedules

Scheduling Observations

Observations are typically scheduled using scripts that execute the [quicksched.py script found on the LGC](#). This is a python3.6+ script that takes in a file with schedule entries in a specified format, and then produces two files to observe the specified sources with the HBAs in mode 5 from subbands 12 to 499.

The telescope typically takes 3 minutes in order to be configured before the first (and any **STOPSTART**) observation begins to produce real data. Additionally it is not uncommon for station handover to occur late. Ensure you consider these points when scheduling high priority observations.

Each entry roughly follows the format

```
YYYY-MM-DDTHH:MM - YYYY-MM-DDTHH:MM <TAB>SourceName [RightAscensionRadians, DeclinationRadians, COORDINATEBASIS]
```

These can be chained together to form a schedule that looks like this.

```
2021-09-20T19:30 - 2021-09-20T20:29 -[J1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']  
2021-09-20T20:30 - 2021-09-20T20:49 -[B1951+32 PSR [5.20531221260202, 0.5738302241353217, 'J2000']
```

After running `python3 quicksched.py --no-write my_schedule.txt`, it will notify you of any issues with the input, or give you a summary of the observations taking place.

Entry Modifiers

STOPSTART: In the case that other observations are scheduled using other software, and you need to leave a gap, you can add **STOPSTART** to the end of the line after the gap takes place. Whenever this keyword is detected, the station shuts down after the previous observation, then starts up 3 minutes before the given scheduled observation is meant to begin. As an example, these

observations will run from 19:27 - 20:29, bring the station down to swlevel 0 for an hour, bring the station up at 21:30, and finally run again from 21:33 - 21:59 before returning the station to software level 0.

```
2021-09-20T19:30 - 2021-09-20T19:59 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']
2021-09-20T20:00 - 2021-09-20T20:29 :[B]1951+32_PSR [5.20531221260202, 0.5738302241353217, 'J2000']
2021-09-20T21:33 - 2021-09-20T21:59 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']
STOPSTART
```

IGNORE_ELEVATION: In the case that a source will be below the default minimum elevation (typically between 10 and 15 degrees depending on setup), the `quicksched.py` script will reject the observation. If you intend to observe the source at such a low elevation, you can include **IGNORE_ELEVATION** to highlight that you intend to observe this source at a low elevation and the script will proceed without highlighting the elevation of the source.

```
2021-09-20T19:30 - 2021-09-20T19:59 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']
2021-09-20T21:33 - 2021-09-20T21:59 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']
IGNORE_ELEVATION
```

IMODEN: Where N is replaced with an observing mode (3-7), this will change the observing antenna and frequencies from the mode 5 default to the specified mode as needed.

Further validation is needed for mode 6, as it sometimes fails to change the clock mode.

```
2021-09-20T19:30 - 2021-09-20T19:59 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']
[MODE3] # LBA Obs
2021-09-20T20:00 - 2021-09-20T20:29 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000'] #
HBA Lo Obs
2021-09-20T20:30 - 2021-09-20T20:59 :[J]1931+4229 [5.110297162889553, 5.110297162889553, 'J2000']
[MODE7] # HBA hi obs
```

ORTOGGLE_FILE: Where "TOGGLE_FILE" is replaced with a file name of choice, this modifier can be used to switch between two observations during schedule execution based on the existence of a file. By default, the first entry on a line will be performed if the file does not exist, while the second will be executed if it does exist. Two files need to be created to perform a toggle: one in the observation folder, and another in the recording folder. Typically, the file name is prefixed by "NOT_" to make it clear that it is disabling the first observation, and enabling the second.

The file must be created before the end of the last observation, otherwise the default observation will be performed.

For I-LOFAR observers, there is a `toggle_obs.sh` script that will create the input filename in the correct directories for you.

After an observation is switched, the file is removed. As a result, it is not recommended to use the same file name for multiple switches, unless the observer wants to re-create the same file multiple times.

```
2022-07-19T17:00 - 2022-07-19T17:59 - [FRB20200120E [2.6090272489593733, 1.2012325539587194, 'J2000']  
OR(NOT_M81) [Sun357]  
2022-07-19T18:00 - 2022-07-19T18:59 - [[Sun357] OR(NOT_SUN) J0939+45 [2.528618475878951,  
0.7897614865274342, 'J2000']
```

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