Introduction to LSST cadence studies

- Send to Fabio Ragosta (fabio.ragosta@inaf.it) your GitHub username to request access to the kilonova_kickstarter repository.

- Create an account in XSEDE.

- Create an account in Astro Data Lab.

    - Log in and click in the *Launch Jupyter Notebook* button to open the Jupyter Lab environment.

    - If needed, run the notebooks in the path */notebooks-latest/01_GettingStartedWithDataLab/* for a tutorial on the Jupyter Environment, Python, and Data Lab.

- Request to Michael Coughlin (cough052@umn.edu) access to the LSSTC Slack workspace.

- Request access to LINCC following the instructions at the *Accessing LINCC JupyterHub* tab. In that weblink you will also find the instructions on how to log in.

- Watch this video for a general overview of LSST cadence optimization. Among the fundamental concepts: Cadence, OpSim run, Metric, etc.

- Read this paper to be introduced to serendipitous Kilonova detection.

- Read this paper to be introduced to triggered Kilonova detection.

- OpSim has produced different runs simulations versions, each of them with cadence families and cadences. To date, the latest are the v2.0-v2.1 runs, review this link for a detailed summary of them. If the link is not working or if there are more updated versions, get the summary from the main repository.

Using the students_KNeSlicer.ipynb code

- From Fabio Ragosta's repository, download the *students_KNeSlicer.ipynb* code and its complementary *kneMetrics.py* file.

- Depending on where you want to run the code upload both files, in a subfolder, either in Data Lab or in LINCC. It is recommended to use LINCC.

    - To run the *students_KNeSlicer.ipynb* code in Data Lab, use the Kernel *LSST-2021.10.13 Py3*. Also the lines in the ### *For Astro Data Lab* ### section have to be uncommented and the lines in the ### *For LINCC* ### section have to be commented.

    - To run the *students_KNeSlicer.ipynb* code in LINCC, use the Kernel *Rubin Sim (2022-05-16)*. Also the lines in the ### *For LINCC* ### section have to be uncommented and the lines in the ### *For Astro Data Lab* ### section have to be commented.

- To use this code, select the cadence by modifying the variable *option* based on the menu. You can change the families that appear on the menu with the variable *fam*. Modify the number of kilonovae to inject with *n_events*, their minimum and maximum distance with *dmin* and *dmax*, and their parameters with *inj_params_list*. With *outfolder* you can modify the name of the folder where all the output files will be saved.

- It is recommended to review the MAF tutorials to become familiar with some of the tools from the *rubin_sim* Python package used in the *students_KNeSlicer.ipynb* code.