

# Jupyter Notebook Intro

`git clone https://github.com/Caltech-IPAC/grits2018-jupyter-tutorial/`

`git clone https://github.com/NASA-NAVO/aas_workshop_2018_summer`

(much material drawn from SciPy2018  
tutorial by J. Grout, M. Busonnier)

# Evolution of the notebook

- 2001-2005: IPython interpreter
- 2011: IPython Notebook
- 2014: Jupyter Notebook
- 2018: Jupyter Lab

# Interactive, Exploratory, Reproducible

- Interactive, browser-based computing environment
- Exploratory data science, machine learning, visualization, analysis, statistics
- Reproducible document format:
  - Code
  - Narrative text (Markdown)
  - Equations (LaTeX)
  - Images, visualizations
- Over 100 programming languages
- Everything open-source (BSD license)

# Live Code on Binder



Loading repository: losc-tutorial/LOSC\_Event\_tutorial/master

Build logs

[show](#)

Here's a non-interactive preview on [nbviewer](#) while we start a server for you. Your binder will open automatically when it is ready.

A screenshot of the Jupyter nbviewer interface. At the top left is the "jupyter nbviewer" logo. To the right are links for "JUPYTER", "FAQ", and two circular icons. Below the header, the repository path "LOSC\_Event\_tutorial" is displayed. A section titled "Name" contains a list of files: "losc-tutorial's repositories", "index.ipynb", "BBH\_events\_v3.json", "GW150914\_4\_template.hdf5", "GW151226\_4\_template.hdf5", "GW170104\_4\_template.hdf5", "H-H1\_LOSC\_4\_V1-1167559920-32.hdf5", and "H-H1\_LOSC\_4\_V2-1126259446-32.hdf5". Each file entry has a small icon to its left.

<https://losc.ligo.org/tutorials>

[https://mybinder.org/v2/gh/losc-tutorial/LOSC\\_Event\\_tutorial/master](https://mybinder.org/v2/gh/losc-tutorial/LOSC_Event_tutorial/master)

# Jupyterlab Status

- <https://github.com/jupyterlab>
- ~4 years of development
- ~150 contributors
- ~60 components
- ~2600 releases (npm + python)
- ~13000 commits (more than classic NB)
- Currently Beta (“User 1.0”, ready to use)

# Jupyterlab Roadmap

- Beta releases from February 2018
  - For all users
  - For adventurous extension developers
- 1.0 this year
  - For all users and extension developers
- Eventually:
  - Classic notebook will be retired

# Sharing notebooks

- Notebook files are in JSON format
- Github is best for sharing
  - Renders notebooks in web interface
  - Store in standalone gist, or as part of repository
  - Dilemma: Clear all output?  
Save the executed version?
  - Can add “open in Binder” or Google Colab

# “I Don’t Like Notebooks”

- JupyterCon talk by Joel Grus <https://t.co/30peBFwTbv>
- Hidden state, out-of-order execution confuse beginners
- Developing code in notebooks discourages putting code in modules and writing tests
- Jupyter’s text editing and autocomplete lag far behind professional editors and IDEs
- Too easy to make “shift-Enter” tutorials in which users don’t learn much



# Suggested best practices

- Put code for reuse in modules
- Develop code with editor or IDE
- Commit notebooks with output cleared
- Think “scratchpad” instead of “notebook”?