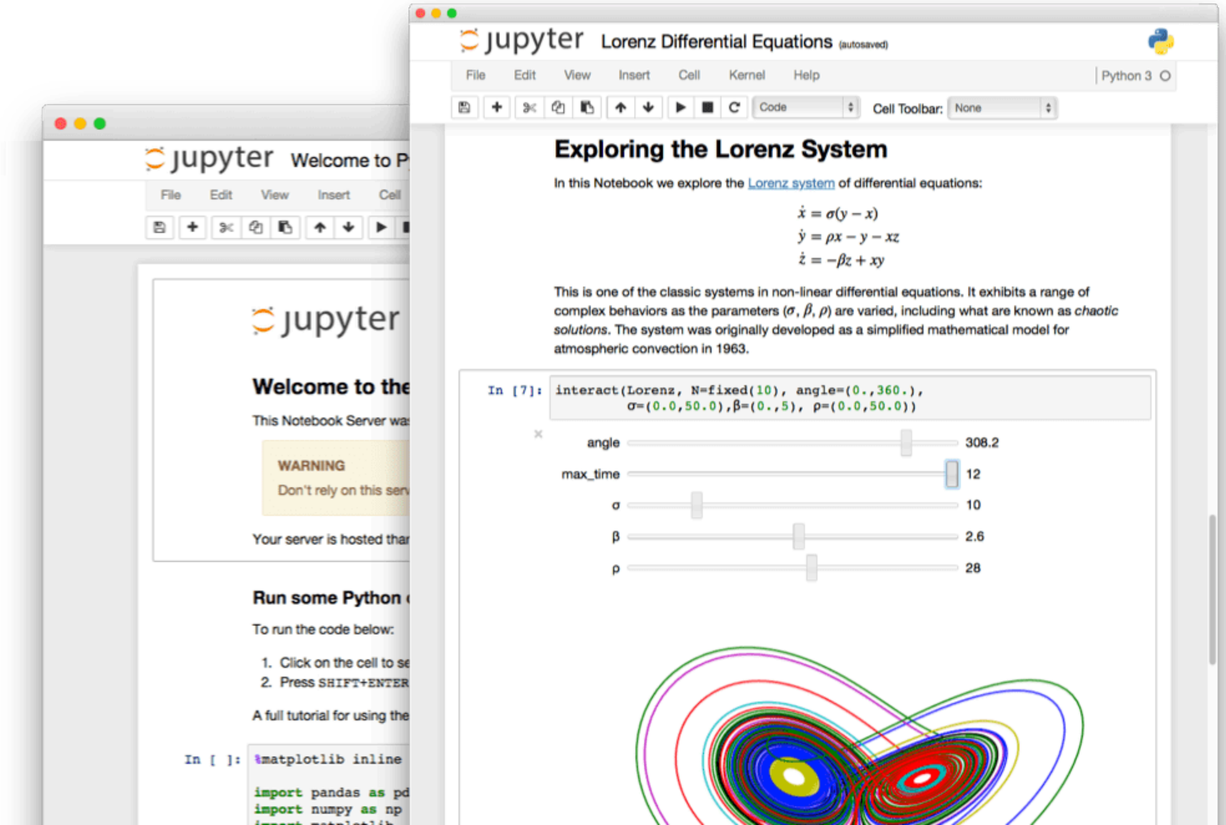

jupyter notebooks
pros, cons & examples with python

WHAT IS JUPYTER NOTEBOOK?

- An open-source web application
- Functions as a more easily **interactive iPython terminal**
- Compatible with over 40 programming languages



A QUICK RUNDOWN

run cell, stop, restart kernel, run all

used python kernel

jupyter lightkurve_example Last Checkpoint: 7 minutes ago (unsaved changes)

Logout

File Edit View Insert Cell Kernel Help Trusted Python 3

Run Code

markdown cell

Validating a first-light TESS result

I'm going to have a quick-look at TESS target TOI-197 to see if I can replicate the basic results of Huber et al. 2019

code cells

In [1]:
```
import lightkurve as lk
import numpy as np
import seaborn as sns
sns.set_context('poster')
```

First I'll download the data...

In [3]:
```
target = 'HIP 116158'

datalist = lk.search_lightcurvefile(target, cadence='short')
datalist
```

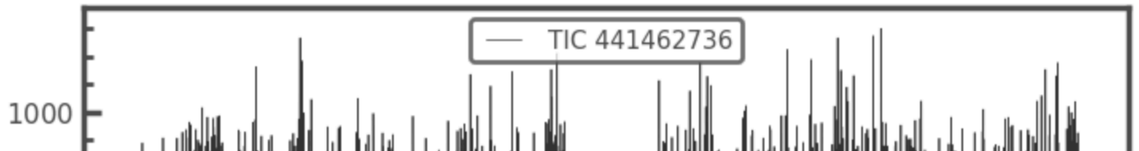
cell output

Out[3]:
```
SearchResult containing 1 data products.

target_name                productFilename                                description  distance
----------- ---------------------------------------------------------- ------------ --------
  441462736 tess2018234235059-s0002-0000000441462736-0121-s_lc.fits Light curves      0.0
```

cell run history

In [8]:
```
lcraw = datalist.download().PDCSAP_FLUX
lc = lcraw.normalize(unit='ppm').remove_nans().remove_outliers()-1e6
lc.plot();
```



WHEN IS JUPYTER NOTEBOOKS GREAT?

- Sharing an (uncommented?) **code is not an efficient** way of sharing knowledge
  - Sharing a Jupyter Notebook is!

- When illustrating how to **reproduce a result** (i.e. tutorials and blog posts)
- When **tweaking plots** to get them just right
- When **prototyping** new code
- When showing your supervisor what you got up to this week
- Working with object-based code, like ‘lightkurve’!

WHEN IS JUPYTER NOTEBOOKS TERRIBLE?

- When building a '**script**' — cannot be run from commandline
- Performing delicate analysis — **no edit history**, cells could be ordered wrong
- Memory intensive work — all variables are stored in memory until closed
- When learning Python — **notebooks discourage good habits**, don't teach basics

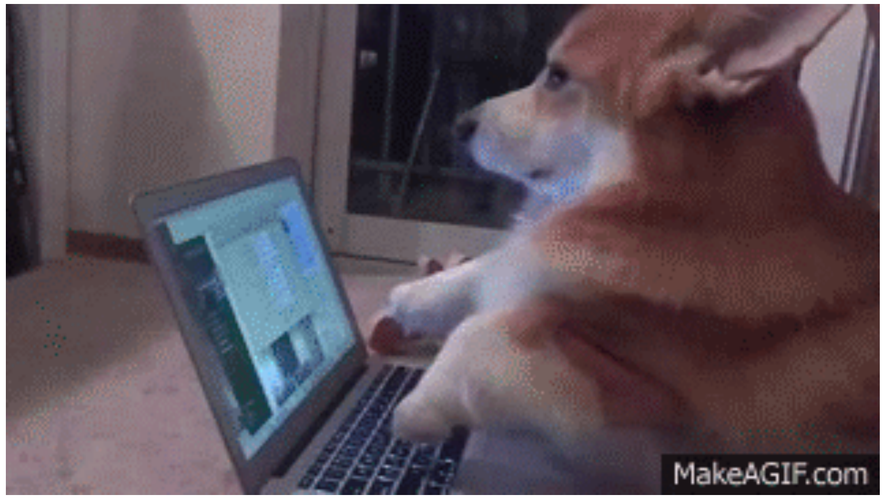
Credit: Why I Dont Like Jupyter Notebooks by Joel Grus

THE PATH TO BECOMING A JUPYTER WIZARD

- Lots of practice
- Write as you go along, add equations etc.
- Save notebooks as Python code, run in terminal
- Tools like **NBViewer**
- **Learn keyboard commands (!)**

SOME USEFUL COMMANDS & TRICKS

- Shift + Enter : Run current cell
- ESC : enter **‘command mode**’
- ESC -> b : create a **new cell** below
- ESC -> m : turn cell into **markdown**
- ESC -> y : turn cell into **code**
- ESC -> l : add **line numbers** to cell
- ESC -> d + d : **deletes cell** (this can be undone)
- Ctrl + Click : **edit multiple lines simultaneously**



- Keyboard shortcuts compeltely customiseable!
- You can select, copy, cut, paste and move cells!

A QUICK EXAMPLE

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Run Code

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SOME USEFUL LINKS!

Install & learn about Jupyter

Install & learn about lightkurve

Raise an issue on the repo,
or fix an existing one!