

Hoffman2 Happy Hour:  
Connecting to the Hoffman2  
Cluster via Jupyter Notebooks +  
Q&A

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# Jupyter Notebooks/Jupyter Lab

- Project Jupyter aims to support interactive data science and scientific computing across all programming languages
  - Jupyter Notebook is a web-based interactive computing platform
  - JupyterLab is the latest web-based interactive development environment

# Connecting via Jupyter Notebook/Lab

<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#connecting-via-jupyter-notebook-lab>

You can display a Jupyter Notebook or JupyterLab session on your local browser while running the interactive code on the Hoffman2 Cluster!

## Prereqs on your local computer:

- ❑ terminal and SSH client
- ❑ a python installation
  - ❑ on Windows you can use:
    - ❑ MobaXterm (install python via: `apt-get install python3`)
    - ❑ Windows Subsystems for Linux (install python via: `sudo apt-get install python3`)
    - ❑ Gib Bash (install python system wide making sure to add python to the system PATH)
- ❑ the h2jupynb script

# Start a Jupyter Notebook session via h2jupynb (Hands-on)

<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#start-a-jupyter-notebook-session>

On your local computer open terminal (do not SSH into the cluster) and:

- ❑ download the h2jupynb script with the command:

```
curl -O https://raw.githubusercontent.com/rdauria/jupyter-notebook/main/h2jupynb
```

- ❑ check out the various options you can request for your Jupyter Notebook/Lab session with:

```
python3 h2jupynb --help
```

# Start a Jupyter Notebook session via h2jupynb (Hands-on)

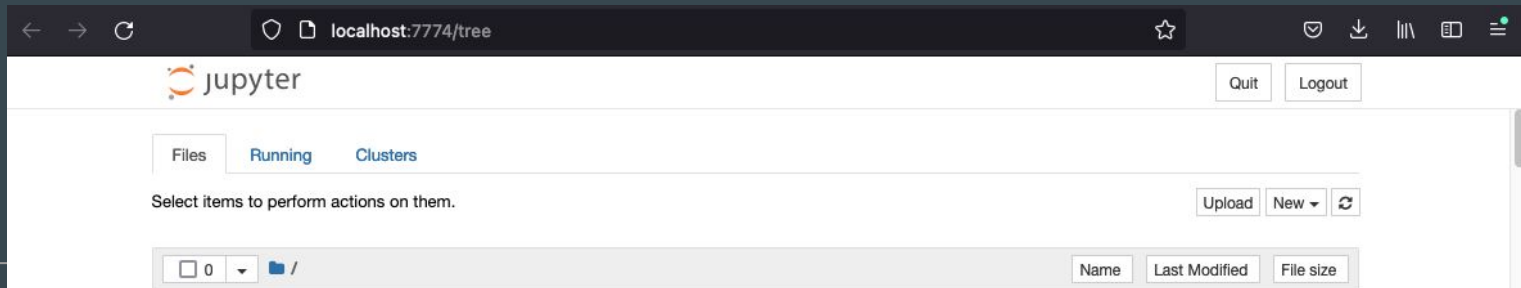
<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#connecting-via-jupyter-notebook-lab>

- ❑ start a Jupyter Notebook session, for ex. with:

```
python3 h2jupynb -u joebruin -m 4 -t 1 -s 2
```

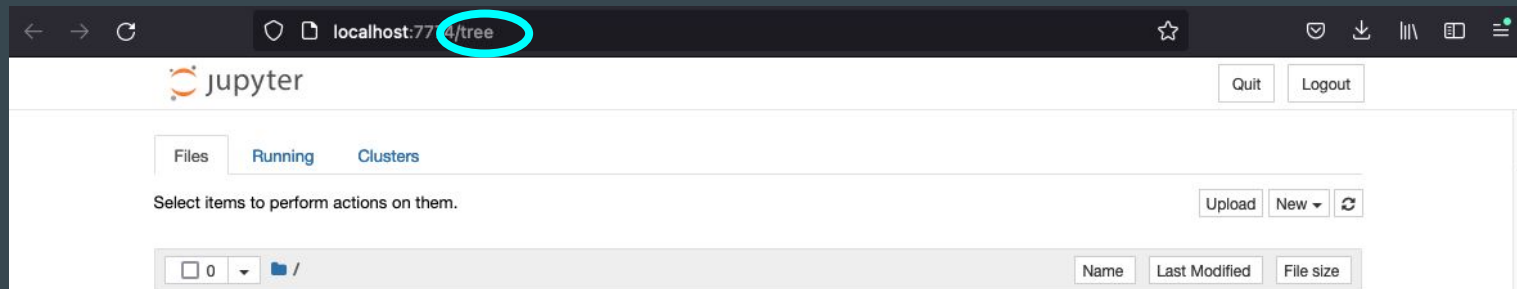
change joebruin with your actual Hoffman2 Cluster username

- ❑ you will be prompted for his Hoffman2 password twice
- ❑ between the first and the second prompt there will be a time lapse as the script is awaiting an allocation on the compute nodes
- ❑ your local browser will open on the landing Jupyter Notebook page

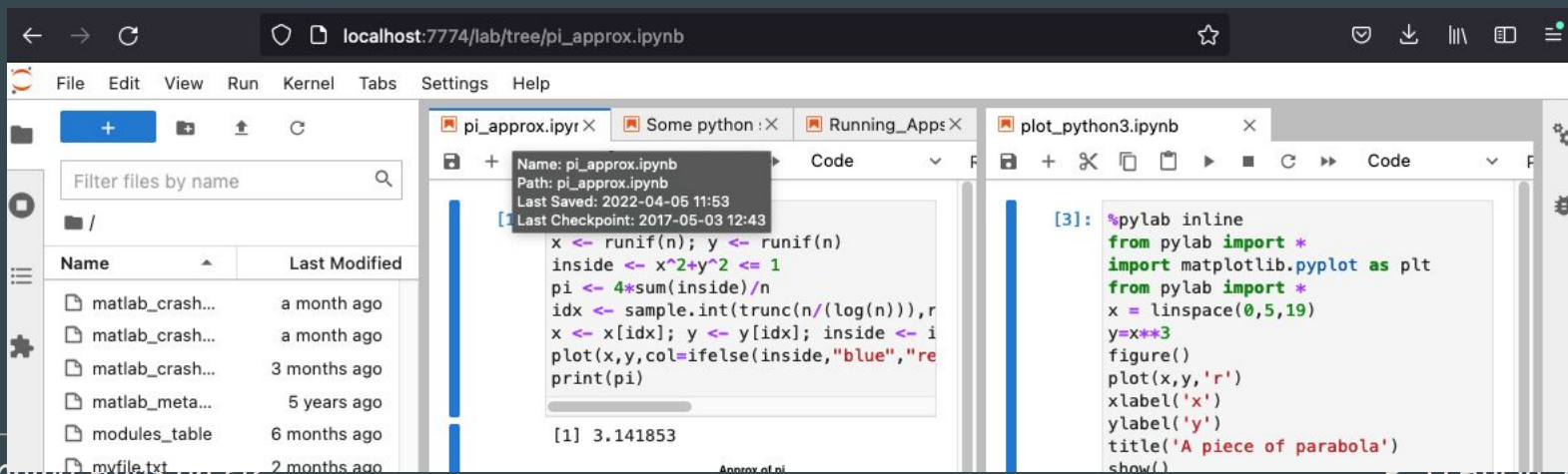


# Switching to a Jupyter Lab session (Hands-on)

<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#start-a-jupyter-lab-session>

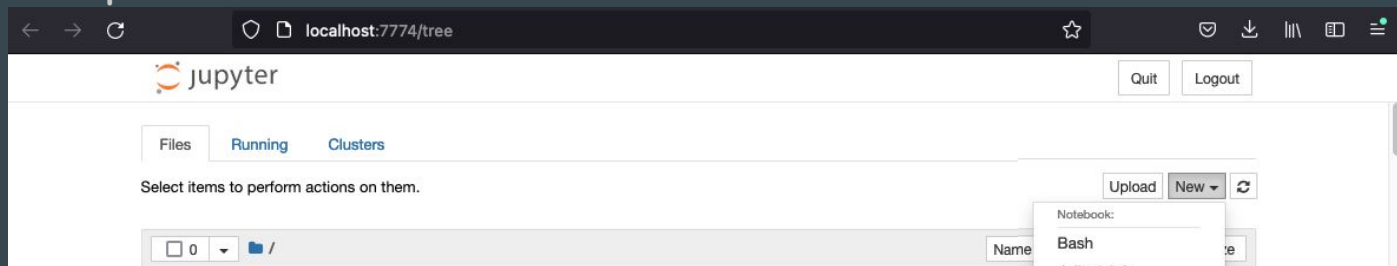


Edit the address of the jupyter session by changing "tree" to "lab"...



# Securing your Jupyter Notebook/Lab (Hands-on)

- from the New dropdown menu select Terminal



- at the terminal prompt issue:

```
jupyter notebook password
```

- the hashed password is saved to your:

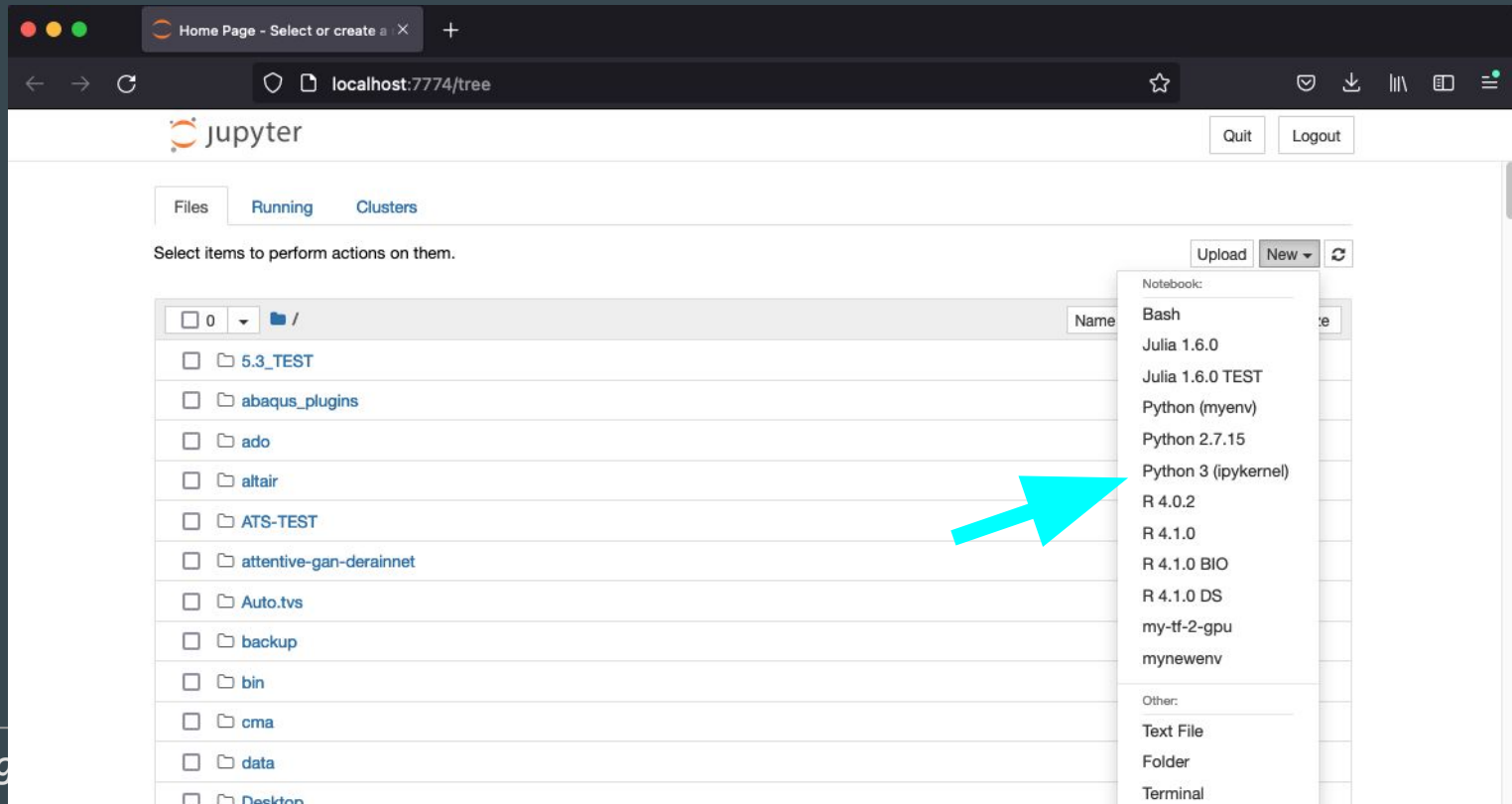
```
$HOME/.jupyter/jupyter_notebook_config.json
```

- should you forget the password you can reset it with

```
rm $HOME/.jupyter/jupyter_notebook_config.json
```

# Opening a python notebook (Hands-on)

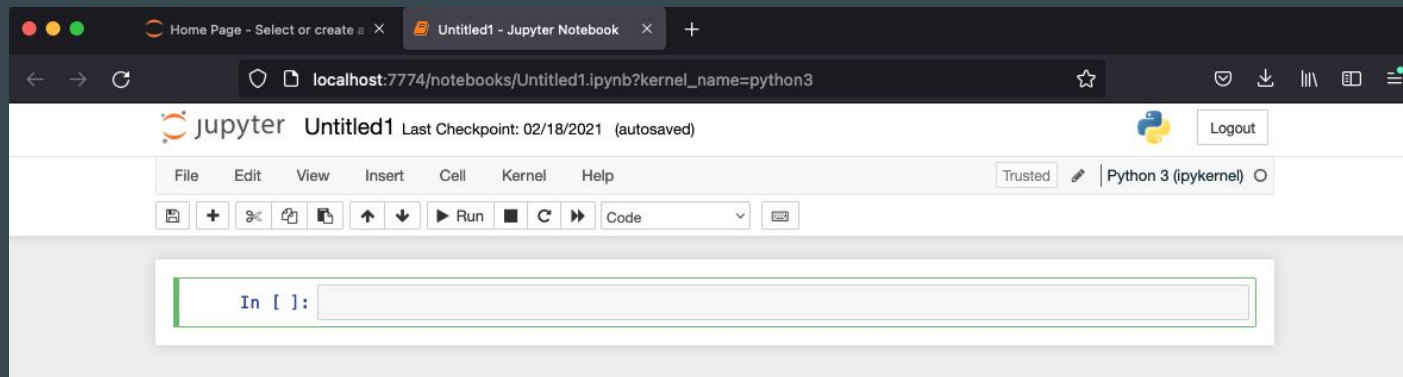
- from the New drop-down menu select Python 3





# Executing a python notebook (Hands-on)

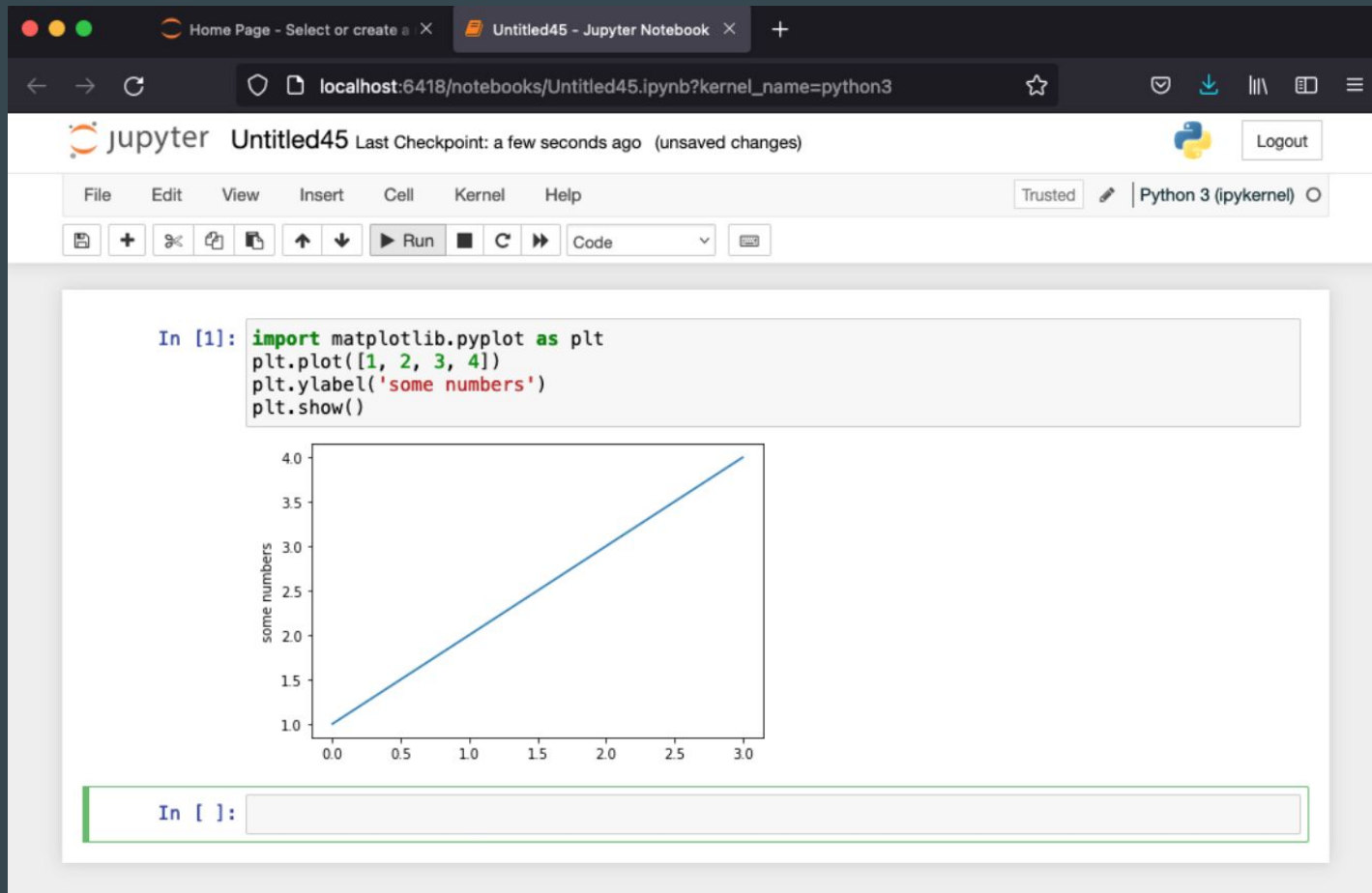
<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#running-python-kernels-in-jupyter>



In the first cell type:

```
import matplotlib.pyplot as plt
plt.plot([1, 2, 3, 4])
plt.ylabel('some numbers')
plt.show()
```

Click the "Run" button



# Installing python libraries via pip in a python nb (Hands-on)

<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#installing-python-libraries-via-pip-in-a-python-notebook>

To install numpy, for example, in a python jupyter notebook type in a notebook cell:

```
import sys
!{sys.executable} -m pip install numpy --user
```

# Running python anaconda virtual env in jupyter (Hands-on)

<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#running-python-anaconda-virtual-environment-kernels-in-jupyter>

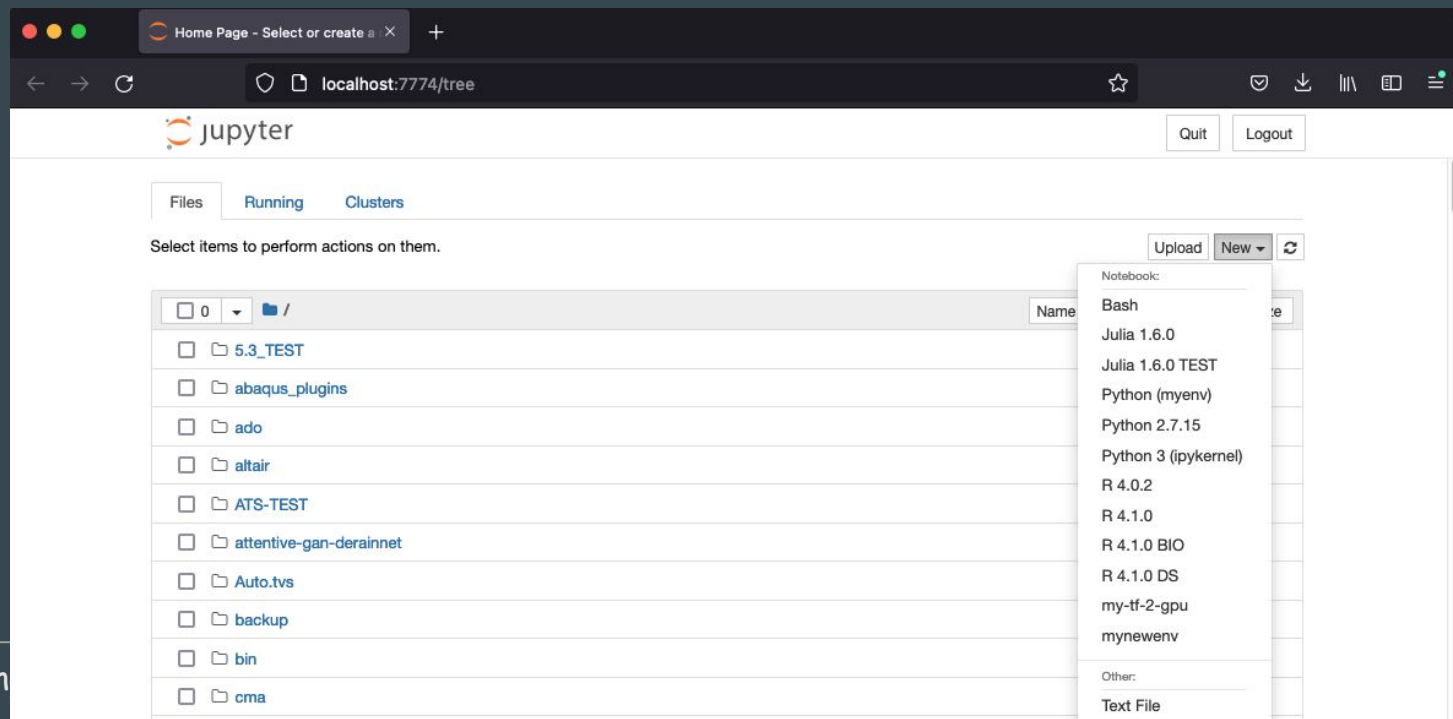
You may need to run a Jupyter notebook on a python or anaconda virtual environment. To do so you will need to install the ipykernel in the python/conda environment. Here we show how you can do so in an previously created anaconda virtual environment called MYCONDAENV:

```
qcrsh -l h_data=6G,h_rt=1:00:00
module load anaconda3
conda activate MYCONDAENV # activate previously created
environment
conda install ipykernel
python -m ipykernel install --user --name=MYCONDAENV
--display-name "MYCONDAENV"
```

# Running R in jupyter (Hands-on)

<https://www.hoffman2.idre.ucla.edu/Using-H2/Connecting/Connecting.html#running-r-kernels-in-jupyter>

Several R kernels, IRkernel, are available from the jupyter interface. For example, in the figure below a Jupyter Notebook interface is shown with the New launcher menu displaying several versions of R.



# Other topics

- ❏ [Running BASH kernels in Jupyter](#)
- ❏ [Running Julia Kernels in Jupyter](#)
- ❏ [Installing other kernels in Jupyter](#)