

# CCNY PHYS 45400 Sp 2025

## Homework 1

### Get and Plot some data!

#### 1. Sun Tower

Imagine you're standing in a field in Egypt, just outside of Cairo, looking due south. There's nothing around except a large tower located 100 meters right in front of you. It's 40 meters tall and 10 meters wide. It's Feb 3rd 2025, at noon in Cairo.

Prepare a plot that shows the entire azimuthal range of your view on the horizontal axis, and 0-90 degree elevation on the vertical axis.

- a. Plot the position of the sun, as well as a rectangle that shows the tower.
- b. How high would the tower have to be (in meters) in order to block out the sun from your perspective?

#### 2. Moon

Go outside and take a picture of the moon. Then use Stellarium to generate a simulated view of the sky at the exact time of your picture. Convince yourself that the two views (observation and simulation) are in agreement.

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For all

- Include your sources and a table of the raw data you used. (This ideally would be a link to your data file online somewhere, like a github repository or google drive link. Make sure sharing is set properly so that with a single click, it can be viewed.)
- Possible source data can be found at [JPL Horizons](#) or you can find other ephemeris sources for the solar system if you search.
- Make sure all plots are formatted nicely and have labeled axes.

Due Date: Wednesday Feb 10, start of class. (via blackboard)

Prepare your work in a typed (no handwritten math or drawn diagrams), document (pdf) with plots and any citations for any references you used, and links to any extensive code you wrote that was used.

If you used any AI to help with code, please cite that. Under no circumstances do I want to read any AI generated text though.