PHY517 / AST443: Observational Techniques

Fall 2017

Homework 1

1. Form your observational team (a group of 3 people).
2. Read the Course Notes for PHY517 / AST443[1] and for PHY515 / PHY445[2].
3. Read the wiki pages on Computing Resources[3] and on Astro Software Overview[4].
4. Imagine `python` returns a number of $99.123456789 \pm 0.00455679$ for your calculation. How should you report it in your lab write-up?
5. On the days of the equinox (day and night are equal length), at what azimuth angle does the Sun rise? Where does it set?
6. Let's practice finding an object:
   - Convert your birthday to a position on the sky using the following transformation:
     - Multiply the month of your birthday by 2. This number becomes the right ascension (if the result is 24^h, make it 0^h).
     - Subtract 2 from the day of your birthday, and multiply the result by 3. This number becomes the declination.
   - Look up the resulting sky position on `simbad`[5]. Search for all objects within at least 0.5 degrees.
   - Sort the results by the number of references, and pick the most referenced object.
   - Make a finding chart for this object using the AAVSO finding chart tool[6]. The finding chart should be 15 degrees across, and be orientated as if you were looking at the sky with the naked eye.
   - Use the ING StarAlt tool[7] to determine when your object is best visible from Stony Brook. The higher up in the sky it is, the better visible it is. Save one figure for each of the 4 modes of StarAlt, choosing the best observing date when appropriate. Note that Mt Stony Brook is not a predefined option in StarAlt, so you have to enter the coordinates manually (pay attention to the format!).

   Note: for the next homework, you will need to include these figures into a LaTeX document, so make sure to save them to disk.

[1] https://github.com/anjavdl/PHY517_AST443/blob/master/documents/phy517_ast443_specifics.pdf
[2] https://github.com/anjavdl/PHY517_AST443/blob/master/documents/phy515_445_course_notes.pdf
[3] https://github.com/anjavdl/PHY517_AST443/wiki/Computing-Resources
[4] https://github.com/anjavdl/PHY517_AST443/wiki/Astro-Software
[5] http://simbad.u-strasbg.fr/simbad/sim-fcoo
[6] https://www.aavso.org/apps/vsp/
[7] http://catserver.ing.iac.es/staralt/index.php