

PHY517 / AST443: Observational Techniques

Homework 1

1. If you have not done so, fill out the pre-class survey.
2. Read the Course Notes for PHY517 / AST443¹ and for PHY515 / PHY445² (pages 1-13).
3. Read the wiki page on Grading³ and the information in the links on plagiarism. Answer the following:
 - (a) Which of these are examples of plagiarism? (More than one answer may be correct.)
 - i. Copying your lab-mate's introduction section of a lab report.
 - ii. Taking somebody else's lab report, slightly modifying each sentence / paragraph, and submitting it as your own.
 - iii. Copying your buddy's telescope proposal for a Keck telescope, and submitting it as your own.
 - iv. Stating a "fact" from wikipedia without citing the original source.
 - (b) What happens when you get a "Q" grade? (Answer yes/no/maybe.)
 - i. Immediate expulsion from school.
 - ii. You lose your scholarship.
 - iii. Immediate "F" for the course grade.
 - iv. You have to take the "Q" course.
4. Read the wiki pages on Computing Resources⁴ and on Astro Software Overview⁵.
5. As soon as your lab group has been assigned, schedule the CCD Lab with the TAs. Note that you need to do the CCD Lab before Lab 2, so do it as soon as possible!
6. Your code returns a number of $99.123456789 \pm 0.00455679$ for your calculation. How should you report it in your lab write-up?
7. On the days of the equinox (day and night are equal length), at what azimuth angle does the Sun rise? Where does it set?
8. The celestial coordinates of the star Altair are approximately $19^{\text{h}}50^{\text{m}}, +08^{\circ}52'$.
 - What is the maximum altitude it can be seen from Stony Brook?

¹https://github.com/anjavdl/PHY517_AST443/blob/master/documents/phy517_ast443_specifics.pdf

²https://github.com/anjavdl/PHY517_AST443/blob/master/documents/phy515_445_course_notes.pdf

³https://github.com/anjavdl/PHY517_AST443/wiki/Grading

⁴https://github.com/anjavdl/PHY517_AST443/wiki/Computing-Resources

⁵https://github.com/anjavdl/PHY517_AST443/wiki/Astro-Software

- What is its distance from the zenith then?
- At a Local Sidereal Time (LST) of $18^{\text{h}}50^{\text{m}}$, what is the hour angle of Altair? Is it to the East or to the West of the meridian?

9. Let's practice finding an object:

- Convert your birthday (or some other date) 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**⁶. 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 tool⁷. 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 tool⁸ 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.

⁶<http://simbad.u-strasbg.fr/simbad/sim-fcoo>

⁷<https://www.aavso.org/apps/vsp/>

⁸<http://catserver.ing.iac.es/staralt/index.php>