Astronomy C10: Week 5

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Weekly Reminders

Reminders!

HW 6 due at 6pm on Friday via Gradescope

TALC 5-7pm on Wednesday and Thursday in Campbell 131 and on Zoom

My **office hours** 9am-10am on Thursday and 4-5pm on Monday in Campbell 355

Midterm Monday Oct 13th! MCQ and in lecture

This weeks plan!

Midterm Info [5 mins]

Midterm review Kahoot [35-40 mins]

Questions? [Remaining time]

Midterm Info

Midterm 1

- When: 9-10am on Monday 10/13 (during lecture)
- Where:
  - My sections will take the exam in **Wheeler Auditorium @ 9AM Monday Oct 13th**
  - **If you have DSP exam accommodations, you will take the exam in Wheeler 130 instead**
- What to bring:
  - Student ID number
  - Discussion section number (Check Cal Central beforehand and remember it!)
  - Pencils and erasers

Midterm exam information for students

- 45 minutes, 26 MC/TF questions on material up to CS-142 (exoplanets)
- Study resources:
  - Practice exam in Course Reader
  - Review sessions
  - MC, TF, FITB questions from textbook (solutions posted on bCourses)

Midterm Extra help!

- Midterm review sessions:
  - Tuesday 6:30-8:30pm in Physics 1 (Brianna, Ben)
  - Thursday 6:30-8:30pm in Physics 1 (Anna, Tamojeet)
  - Sunday 9-11am in Physics 1 (Eli, Peter, Jacob)

Possibly Useful Information

d (pc) $= 1/p$ (arcsec) $\quad d = vt \quad$ density $\rho = M/V \quad c = 3 \times 10^5$ km/s

For a sphere, $V = \frac{4}{3}\pi R^3$, $A_{\rm surface} = 4\pi R^2 \quad$ For a circle, $A = \pi R^2$, $C = 2\pi R \quad \pi \approx 3.14$

There are about 3.2×10^7 seconds per year, and 86,400 (roughly 10^5) seconds per day

Degrees Kelvin = degrees Centigrade + 273; Fahrenheit = (9/5)Cent. + 32 $\quad \theta \approx \lambda/D$

1 AU $= 1.5{\times}10^8$ km ≈ 8.3 light minutes $\quad$ 1 light year (ly) $\approx 63,000$ AU $\approx 9.5{\times}10^{12}$ km $\approx 10^{13}$ km

1 pc $= 3.26$ ly $\approx 3 \times 10^{18}$ cm $\approx 3 \times 10^{13}$ km $\quad 1$ Å $= 10^{-8}$ cm $= 10^{-10}$ m $= 0.1$ nm

$60''$ (arcsec) $= 1'$ (arcmin), $60' = 1^\circ$ (degree), 360° = full circle $= 2\pi$ radians = 24 hours

$\lambda_{\rm peak} T \approx 3 \times 10^6$ nm K $= 3 \times 10^7$ Å K $\quad \lambda f = c \quad P = 1/f \quad \mathcal{E} = \sigma T^4 \quad E = hf$

$z = (\lambda - \lambda_0)/\lambda_0 = \Delta\lambda/\lambda_0 \approx v/c$ if $v \lesssim 0.2c$

$F = GM_1M_2/d^2 \quad M_1 r_1 = M_2 r_2$

$F = ma$

$L_{\rm thermal} = 4\pi R^2 \sigma T^4$ (for a sphere)

$P^2 = kR^3$ [$k \approx$ constant $\approx 4\pi^2/(GM_1)$ if $M_1 >> M_2$]; in general, $P^2 = (4\pi^2 R^3)/[G(M_1 + M_2)]$

For planets, $v \propto 1/\sqrt{R}$

Questions?

Midterm Kahoot! [40 mins]

Kahoot Questions

1. if we double the diameter of a telescope's mirror, the light gathering power increases by a factor of
2. we can determine the chemical composition of stars by measuring absorption lines of their spectra.
3. Venus undergoes retrograde motion when it is on the same side of the Sun as Earth is
4. which phase of the moon rises at approximately 9pm
5. the daytime sky is blue primarily because
6. The asteroid belt marks the Roche Limit of the Sun
7. Chromatic Aberration in the lenses of our eyes causes stars to twinkle
8. Which of the following best describes why Pluto was demoted to dwarf planet?
9. star Sunseri is moving away from us at 100km/s, and I get in a rocket ship to chase it at 200km/s, the star will appear
10. We can see the crescent phase of Jupiter in the spring
11. I need to change Mars' orbit, I push it to a new orbital radius of 3 AU (It was 1.5 AU) how is the period effected?
12. In the cosmic calendar where January 1st is the Big Bang and today is December 31st, what day did humanity show up?
13. What is an Electromagnetic Wave?
14. what is an arcsecond?
15. If I have a star 10 times colder than the Sun, what factor does the peak wavelength change by?
16. what can we learn about a planet using doppler wobble method?
17. what is the relative brightness dip of the transit method proportional to?
18. a planet undergoing the greenhouse effect has an atmosphere with which traits?
19. A Earth 2.0 is just like earth in every way except it has no tilt, will it experience the same seasons as Earth?

Questions?

Attendance checkout:

See ya next time!