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Astronomy 103
Midterm 1
February 19, 2014

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Instructions:

No books, notes or calculator are allowed. You have 50 minutes to complete the exam, and please do not turn to the next page until instructed to do so.

You may find the following information helpful:

- 1 AU $= 3 \times 10^8$ km

- speed of light $c = 3 \times 10^5$ km/s

- Kepler's 3rd law:
$$a^3 = P^2$$
  with the period P in years and semi-major axis a in AU.

- Newton's law of gravity:
$$F = \frac{GMm}{r^2}$$

- Peak wavelength and temperature of blackbody radiation:

$$\lambda = \frac{3 \times 10^6}{T} \text{ nm}$$

  with wavelength λ in nm (1 nm = 10^{-9} m) and temperature T in Kelvin.

- Relationship between frequency f and wavelength λ of light:

$$\lambda = \frac{c}{f}$$