

Physics 214

Quiz 2-5

- a) The largest astronomical telescopes have mirrors about 10 meters in diameter. What angular separation of visible objects (use $\lambda = 550 \text{ nm}$) can they resolve if diffraction is the limiting factor?
- b) Could such a telescope resolve the pitchers mound from home plate on a lunar baseball field (*i.e.*, separated by 18.4 m) on the moon? Assume the moon is $3.8 \times 10^8 \text{ m}$ away.
- c) A laser has an aperture of 0.25 cm. It sends its light ($\lambda = 550 \text{ nm}$) to the moon. What is the diameter of the beam that hits the moon?
- d) To decrease the spot size on the moon, we could do which of the following (check all that apply):
- ☐ decrease the aperture size
 - ☐ increase the aperture size
 - ☐ decrease the wavelength
 - ☐ increase the wavelength