

**Physics 214**

**Quiz 2-6**

- 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 two sets of goalposts at opposite ends of a lunar soccer field (*i.e.*, separated by 100 m) on the moon? Assume the moon is  $3.8 \times 10^8 \text{ m}$  away.
- c) A laser has an aperture of 0.45 cm. It sends its light ( $\lambda = 580 \text{ nm}$ ) to the moon. What is the diameter of the beam that hits the moon?
- d) To increase 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