

**AST 250 – Spring 2018**  
**Homework Due: Friday March 23**

25. (a) What is the variation in the solar flux incident on Halley's comet due to the eccentricity of its orbit?  $a = 17.8$  AU and  $e = 0.967$ . Quote your answer as a ratio of the solar flux at perihelion to the solar flux at aphelion.



Halley's Comet nucleus seen from the Giotto probe in 1986.

- (b) Centaurs are dynamically unstable minor bodies (orbits stable only for millions of years) in the Solar System that originate in the Kuiper Belt but get scattered into orbits that cross the gas giants in the outer solar system. In 1997, the Spacewatch telescope on Kitt Peak discovered a large Centaur (diameter of 230 km) that orbited between Saturn and Uranus. It has a perihelion of 13.099 AU and an aphelion of 18.545 AU. What is the semi-major axis and eccentricity of its orbit?