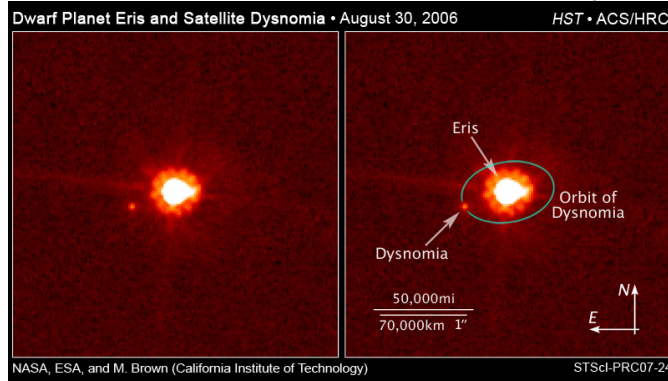


## AST 250 – Spring 2019

### Homework Due: Monday March 25

26. The Dwarf Planet Eris has a small moon, Dysnomia, which orbits Eris with a semi-major axis  $a = 37,370$  km in a 15.774 day orbit. What is the ratio of the mass of Eris to Pluto? ( $M_{\text{Pluto}} = 1.303 \times 10^{22}$  kg).



27. When we plot the distribution of semi-major axes for the Asteroid Belt, several gaps (the “Kirkwood Gaps”) occur in the distribution where asteroids are in a “resonance” with Jupiter (the asteroid’s orbital period is a simple fraction - like  $\frac{1}{2}$  - of Jupiter’s orbital period). There are prominent Kirkwood gaps for  $a = 2.5$ ,  $2.82$ , and  $3.276$  AU. Calculate which resonances these correspond to (as nearest simple fraction). (Jupiter:  $a = 5.2$  AU,  $P = 11.862$  yr)

