

**Equations, etc.**

Gravitational constant	$G = 6.67 \times 10^{-11} \text{ N m}^2/\text{kg}^2$
Earth-Sun distance	$1 \text{ AU} = 1.5 \times 10^{11} \text{ m}$
Gravitational Potential Energy:	$U = -GM\mu/r$
Distance Modulus:	$m_V - M_V = 5 \log d + 5$
Equation for an ellipse:	$r = a(1 - e^2)/(1 + e \cos \theta) = (L^2/\mu^2)/[GM(1 + e \cos \theta)]$
Orbital Velocities:	$v_{\text{peri}} = 2\pi a/P [(1 + e)/(1 - e)]^{1/2}$ $v_{\text{ap}} = 2\pi a/P [(1 - e)/(1 + e)]^{1/2}$ $v^2 = G(m_1 + m_2)(2/r - 1/a)$
Plate scale (rad/unit length):	$d\theta/dy = 1/f$
Parallax Angle (arcsec):	$p = 206265/d_{\text{AU}} = 1/d_{\text{pc}}$