

## Some potentially useful formulas

$$F = \frac{G m_1 m_2}{r^2}$$

$$F = \frac{k q_1 q_2}{r^2}$$

$$F = ma$$

$$(\text{distance}) = (\text{speed})(\text{time})$$

$$v = \frac{\Delta x}{\Delta t}$$

$$a = \frac{\Delta v}{\Delta t}$$

Work = force  $\times$  distance

Momentum =  $p = mv$

$\Delta x' = \gamma \Delta x$ ,  $\Delta x$  longest in proper frame

$\Delta t' = \gamma \Delta t$ ,  $\Delta t$  shortest in proper frame

$$\gamma = \frac{1}{\sqrt{1 - \left(\frac{v}{c}\right)^2}}$$

$$v = \lambda \nu$$

$$\nu = \frac{1}{T} \quad (T = \text{period})$$

$$c = 3 \times 10^8 \text{ m/s}$$

$$G = 6.7 \times 10^{-11} \frac{\text{Nm}^2}{\text{kg}^2}$$

$$k = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2}$$