Orbital precession from ECE2

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(www.webarchive.org.uk, www.aias.us,
www.atomicprecision.com, www.upitec.org)

3 Numerical comparisons

The Sommerfeld Lagrangian is

$$\mathscr{L} = -\frac{m\,c^2}{\gamma} - U \tag{48}$$

with potential energy

$$U = -\frac{m\,M\,G}{r} \tag{49}$$

The equations to be investigated are (with $\dot{\theta} = \omega$):

$$\frac{dr}{d\theta} = \frac{dr}{d\tau}\frac{d\tau}{d\theta} = \frac{dr}{dt}\frac{dt}{d\theta} = \frac{\dot{r}}{\omega} \tag{50}$$

$$\frac{p}{L} = \frac{\gamma m v_0}{\gamma m r^2 \omega} = \frac{v_0}{\omega r^2} \tag{51}$$

$$v_0 = \sqrt{\dot{r}^2 + r^2\omega^2} \tag{52}$$

$$v = \gamma v_0 \tag{53}$$

$$\gamma = \frac{1}{\sqrt{1 - v_0^2/c^2}} \tag{54}$$

Plot
1. dr/dtheta, a) Lagrange, b) Eq.(15) of 328(4)
2. p/L, a) Lagrange, b) Eq.(17) of 328(4)
3. v, v0 and gamma

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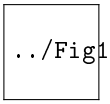

Figure 1: xxx.

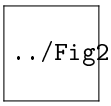

Figure 2: xxx.