

375(a). Calculation of Perseverance of S2

This is calculated from Einsteinian general relativity:

$$\Delta\phi = \frac{6\pi \cdot Mb}{c^2 a (1-e^2)} \quad - (1)$$

For S2:

$$M = \text{mass of attracting object} = 7.956 \times 10^{36} \text{ kg}$$

$$G = 6.67408 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$$

$$c = 2.99792458 \times 10^8 \text{ m s}^{-1}$$

$$a = \text{semimajor axis} = 1.4253 \times 10^{14} \text{ m}$$

$$e = \text{eccentricity} = 0.8831$$

$$T = \text{orbital interval} = 15.56 \text{ earth years}$$

$$\text{So } \Delta\phi = 3.549 \times 10^{-3} \text{ rad s}^{-1} \quad - (2)$$

Now convert to degrees per orbit using:

$$T = 15.56 \times 3.154 \times 10^7 \text{ seconds} \quad - (3)$$

$$\text{One radian} = 57.2958 \text{ degrees} \quad - (4)$$

$$\text{So } \Delta\phi = 57.2958 \times 15.56 \times 3.154 \times 10^7 \times 3.549 \times 10^{-3}$$

$$= 9.979 \times 10^7 \text{ degrees per orbit.} \quad - (5)$$

Theoretical

$$\Delta\phi = 9.979 \times 10^7 \text{ degrees per orbit}$$

Experimental

$$\Delta\phi = -1 \text{ to } 2 \text{ degrees per orbit}$$

The Einstein theory is in error by eight orders of magnitude, a factor of ten million