. The precession is given by:

$$\Delta \phi = \frac{2\pi}{c^2} \left(v_N^2 + r^2 \left(\omega_1^2 + 2\omega \omega_1 \right) \right) = \omega_1 T \quad -(1)$$

This is the quadratic equation:

$$A \omega_1^2 + B \omega_1 + C = 0 \quad -(2)$$

where

$$A = \frac{2\pi}{c^2} r^2, \quad B = \left(\frac{4\pi r^2}{c^2} - T \right), \quad C = \frac{2\pi v_N^2}{c^2} \quad -(3)$$

so

$$\omega_1 = \frac{1}{2A} \left(-B \pm \left(B^2 - 4AC \right)^{1/2} \right) -(4)$$

and the precession is:

$$\Delta \phi = \omega_1 T \quad -(5)$$

Here v_N is the orbital linear velocity, ω is the orbital angular velocity, r is the orbital radius, T is the time taken for one orbit and c the vacuum speed of light.

When:

$$\omega_1 << \omega \quad -(6)$$

it follows as in Note 412(1) that:

$$\omega_1 = \omega \left(\frac{v_N}{c} \right)^2 -(7)$$

Eq. (7) is an approximation of the analytical solution (4). The following results are for eq. (7).

2)

Table 1, ω_1 for the Planets

Planet	V_N /10^4 ms^{-1}	T /years	T /10^7 sec	ω /10^{-7} rad s^{-1}	ω_1 /10^{-15} rad s^{-1}
Mercury	7.74	0.241	0.760	8.267	55.10
Venus	3.50	0.615	1.942	3.287	4.48
Earth	2.98	1.000	3.156	1.991	1.96
Mars	2.41	1.881	5.936	1.058	0.68
Jupiter	1.31	11.862	37.44	0.169	0.0323
Saturn	0.97	29.458	92.97	0.068	0.0071
Uranus	0.68	84.013	265.15	0.024	0.0012
Neptune	0.54	164.794	520.09	0.012	0.00039
Pluto	0.47	248.430	784.05	0.008	0.00020

For each planet:
$$\omega_1 << \omega \quad -(8)$$

self consistently.

Table 2: Relation between ω_1 and Mean Orbital Distance $\langle r \rangle$

Planet	$\langle r \rangle$ /10^{10} m	ω_1 /10^{-15} rad s^{-1}
Mercury	5.79	55.10
Venus	10.80	4.48
Earth	15.00	1.96
Mars	22.80	0.68
Jupiter	77.90	0.032
Saturn	143.00	0.0071
Uranus	287.00	0.0012
Neptune	450.00	0.00039
Pluto	591.00	0.00020

Table 3: Table of Precessions, $\Delta\phi = \omega_1 T$

Planet	$\Delta\phi$ (radians per planet year)	$\Delta\phi$ (radians per Earth year)	$\Delta\phi$ (Einstein) (radians per earth year)	$\Delta\phi$ (arc sec /century)	$\Delta\phi$ (total) (radians per Earth year)
Mercury	4.186×10^{-7}	1.688×10^{-6}	2.085×10^{-6}	34.82	1.15×10^{-3}
Venus	8.70×10^{-8}	1.414×10^{-6}	4.184×10^{-7}	2.92	1.61×10^{-4}
Earth	6.198×10^{-8}	6.198×10^{-8}	1.862×10^{-7}	1.63	5.55×10^{-4}
Mars	4.060×10^{-8}	2.16×10^{-8}	6.553×10^{-8}	0.46	4.20×10^{-4}
Jupiter	1.21×10^{-8}	1.00×10^{-9}	3.024×10^{-9}	0.021	2.68×10^{-5}
Saturn	6.60×10^{-9}	7.10×10^{-10}	6.647×10^{-10}	0.015	3.20×10^{-5}
Uranus	3.33×10^{-9}	1.23×10^{-10}	1.156×10^{-10}	0.0025	1.93×10^{-6}
Neptune	2.02×10^{-9}	3.90×10^{-11}	3.758×10^{-11}	0.00080	1.06×10^{-7}
Pluto	1.54×10^{-9}	1.96×10^{-11}	2.020×10^{-11}	0.00040	—

Therefore
$$\Delta\phi = \omega_1 T - (8)$$

gives non Newtonian precession caused by the Sitter rotation of the Newtonian theory of orbits. The results of Eqn. (8) are broadly similar to those of the if correct and obsolete Einstein theory.

The only thing that can be observed experimentally is the total precession, given in radians per earth year in the last column of Table 3. It is desired in the third edition of Maria and Thomas that after

+) removal of the effects of other planets and objects, the observed precession is as in Table 4.

Table 4, "Claims" of Mercer and Thomson

Planet	"Observed" Precession After removing planetary effects (in arc seconds per earth century)	$\Delta\phi = \omega_{\perp} T$ (arc seconds per Earth century)
Mercury	43.11 ± 0.45	34.82
Venus	8.4 ± 4.8	2.92
Earth	5.0 ± 1.2	1.63

No data are given for any other planet, and the data are the same for the 3rd and 4th editions. These data are compared with $\Delta\phi = \omega_{\perp} T$ in Table 4 in the same units of arc seconds per Earth century. Note carefully that the only thing that is really observed is the total precession given in the last column of Table 3. So the so called "observed" precessions of Mercer and Thomson and all doomsdayers is the result of an incorrect and self inconsistent attempt to remove the effects of other planets and objects. This is a hugely complicated N body problem. The problem for the standard model is that these effects are removed with Newtonian theory, following nineteenth century procedures. They should have been removed with non-Newtonian theory.

5) The Einstein theory should be discarded as being completely meaningless, riddled with many errors pointed out in the UFT series.

In the new theory is much simpler and is free of errors in the limit of $\gamma \to 1$. (i) It has no adjustable parameters.

Unfortunately the solar system is a very poor place in which to test a precession theory because every object influences every other. If it can be claimed that there is a non-Newtonian remnant then it is given by $\Delta\phi$ and certainly not by the Einstein theory. The rigorous explanation of $\Delta\phi$ is eqn. (i) in that it obeys the limit:

$$\Delta\phi = \frac{2\pi}{c^2}\left(v_N^2 + r^2\left(\omega_1^2 + 2\omega\omega_1\right)\right)$$

$$\xrightarrow{\omega_1 T} \quad -(9)$$

of the correctly relativistic theory:

$$\Delta\phi = \frac{2\pi}{c^2}\left(v_N^2 + r^2\left(\omega_1^2 + 2\omega\omega_1\right)\right), \quad -(10)$$

which is the universal law of precession for

$$\omega \neq \omega_1 \quad -(11)$$

The obvious way of proceeding is to find ω_1 from any measured $\Delta\phi$. Therefore ω_1 should be found from the total precession in the last column of Table 3 for each planet.