239(8): Comparison of Experimental, Milkowski and Einstein Processions.

From eq. (38) of note 239(7) the Milkowski precession is approximated by:

$$\Delta\theta \sim \pi\left(\frac{v}{c}\right)^2 \quad -(1)$$

where v is the orbital velocity and c the speed of light.

The Einstein precession is given by:

$$\Delta\theta = \frac{6\pi G\underline{M}}{ac^2(1-\epsilon^2)} \quad -(2)$$

where G is Newton's constant, $\underline{M}$ is the mass of the sun, a the semi major axis and ϵ the eccentricity. Contemporary high precision ephemeris data clean to give $\Delta\theta$ with great precision. It is difficult to find the relevant data by a website search, but there is one site that give the data for the experimentally observed total perihelia precession of the planets:

www.farside.ph.utexas.edu

However this site gives results that are ten time too small. Assuming that this is a typographical error the correct results are:

Table 1: Experimental Data

Planet	$v(ms^{-1})$	$\Delta\theta$ (observed) (arcsec/century)
Mercury	4.787×10^4	5750
Venus	3.502×10^4	2040
Earth	2.978×10^4	11450
Mars	2.408×10^4	16280
Jupiter	1.307×10^4	6550
Saturn	0.969×10^4	19500
Uranus	0.681×10^4	3340
Neptune	0.543×10^4	360

1) The Milkowski and Einstein precessions are as follows, in arc seconds per century:

Planet	Milkowski	Einstein	Observed
Mercury	1.65	42.195	5750
Venus	0.89	8.6186	2040
Earth	0.64	3.8345	11450
Mars	0.42	1.3502	16280
Jupiter	0.30	0.0623	6550
Saturn	0.165	0.0137	19500
Uranus	0.03	0.0024	3340
Neptune	0.02	0.0008	360

Tabled

1) It is claimed in standard physics that Einstein reduces to Milkowski in the limit:

$$r \to \infty \quad -(3)$$

but for the outer planet Neptune it is seen that the Milkowski precession is ten times greater than the Einstein precession. So there is a fatal internal self inconsistency in the Einstein theory

2) It is claimed in standard physics that it is possible to calculate the gravitational effect of all planets on the perihelia precession of the orbit of a given planet. This is done with

3) N planet perturbation theory, but using the Newtonian force law:

$$\underline{F} = -\frac{mMG}{r^2}\underline{e}_r \quad -(4)$$

This is an incorrect and self inconsistent procedure. In order to be self consistent with Einsteinian general relativity the EGR force law should be used in the N planet perturbation code:

$$\underline{F} = \left(-\frac{mMG}{r^2}\underline{e}_r - \frac{3L_0^2 MG}{mc^2 r^4}\right)\underline{e}_r \quad -(5)$$

(eqv. (11) of note 239(6)). The standard physics incorrectly uses eqv. (4) to arrive at an "anomaly" that is claimed to be described precisely by eqv. (5). For Saturn for example the observed precession is 19,500 arc seconds a century, but the Einstein theory gives 0.0137 arc second a century. It is claimed that Newtonian N planet perturbation theory is precise enough to give exactly 1949.9863 arc seconds per century.

This is simply not a credible claim. The precision needed is about one part in ten to the power seven. Furthermore, some papers claim that the experimental anomaly is precisely the same as the Einstein value, which means that the N planet

+) Newtonian perturbation theory must be accurate to about one part in ten to the power nine.

For Mercury, on the other hand, the total observed perihelion precession is 5750 arc seconds per century, compared with the Einstein claim of 42.195 arc seconds per century. In this case it is claimed that the Newtonian N planet perturbation theory is accurate enough to produce exactly 5707.805 arc seconds per century. This is an accuracy of only one part in a hundred, or if it is claimed that the "anomaly" is the same exactly as the Einstein result, 42.195 arc seconds per century, an accuracy of about one part in ten power seven.

It is very unlikely that an N planet perturbation procedure can produce such accuracies, and the perturbation code is based on the wrong force law, eqn. (4). The claim of standard physics is that EGR is a precise universal law of gravitation, so it must be used in calculating all precession contributions. If this is done correctly the Einstein theory fails completely.