1) 193(1): Gravitational Time Dilation and Red Shift.

In UFT 192 it was shown that Einsteinian general relativity is internally self inconsistent. This is because the claimed metric infinitesimal line element:

$$ds^2 = c^2 d\tau^2 = \left(1 - \frac{r_0}{r}\right) c^2 dt^2 - \left(1 - \frac{r_0}{r}\right)^{-1} dr^2 - r^2 d\theta^2 \quad -(1)$$

does not give a precessing ellipse:

$$r = \frac{\alpha}{1 + \epsilon \cos(x\theta)} \quad -(2)$$

It is therefore very simple to show that Einsteinian general relativity (EGR) cannot be correct. This can be done in two lines:

$$\frac{dr}{d\theta} = \frac{x\epsilon}{\alpha} r^2 \sin(x\theta) = r^2 \left(\frac{1}{b^2} - m(r)\left(\frac{1}{a^2} + \frac{1}{r^2}\right)\right)^{1/2} \quad -(3)$$

so:

$$\boxed{m(r) = \left(\frac{1}{b^2} - \left(\frac{x\epsilon}{\alpha}\right)^2 + \left(\frac{x}{\alpha}\right)^2 \left(1 - \frac{\alpha}{r}\right)^2\right)\left(\frac{1}{a^2} + \frac{1}{r^2}\right)^{-1} \neq 1 - \frac{r_0}{r}} \quad -(4)$$

where

$$r_0 = 2mG/c^2, \quad -(5)$$

$$a = \frac{L}{mc}, \quad b = \frac{Lc}{E}. \quad -(6)$$

2) The "precision tests" of the incorrect function:

$$m(r) = ?\ 1 - \frac{r_0}{r} \quad -(7)$$

have no meaning. This has been shown in detail in UFT 49, 118, 120, 150, 155 and 186 − 192. The precision tests are: perihelion precession, deflection of light by the sun, the gravitational red shift, gravitational lensing, time delay, frame dragging, strong field tests and gravitational time dilation. These are meaningless because of the absurdity of eq (4).

The gravitational time dilation for example is "defined" in "wikipedia" (a notoriously inaccurate website) as:

$$\tau = t_f \left(1 - \frac{r_0}{r}\right)^{1/2} \quad -(8)$$

but even the definition is incorrect. The correct definition is given by:

$$ds^2 = c^2 d\tau^2 = m(r)\, c^2 dt^2 - d\underline{r} \cdot d\underline{r} \quad -(9)$$

where

$$d\underline{r} \cdot d\underline{r} = v^2 dt^2 \quad -(10)$$

$$= \frac{dr^2}{m(r)} - r^2 d\theta^2$$

So:

3)

$$c^2 d\tau^2 = \left(n(r)c^2 - v^2\right) dt^2 \quad -(11)$$

and $$d\tau = \left(n(r) - \left(\frac{v}{c}\right)^2\right)^{1/2} dt \quad -(12)$$

In special relativity:

$$n(r) = 1 \quad -(13)$$

so $$d\tau = \frac{1}{\gamma} dt \quad -(14)$$

where $$\gamma = \left(1 - \frac{v^2}{c^2}\right)^{-1/2} \quad -(15)$$

is the Lorentz factor.

So eq. (8) is incorrect. It is not meaningful to claim a "precision test" of an incorrect theory.

Furthermore the gravitational time dilation is different for different systems. For the solar system it should be:

$$d\tau = \left(\frac{1}{b^2} - \left(\frac{x\epsilon}{d}\right)^2 + \left(\frac{x}{d}\right)^2\left(1 - \frac{d}{r}\right)^2\right)\left(\frac{1}{a^2} + \frac{1}{r^2}\right)^{-1} - \left(\frac{v}{c}\right)^2\Bigg)^{1/2} dt \quad -(16)$$

and for the spiral galaxy it ought to be:

$$d\tau = \left(\left(\frac{1}{b^2} - \frac{\varsigma^2}{r^2}\right)\left(\frac{1}{a^2} + \frac{1}{r^2}\right)^{-1} - \left(\frac{v}{c}\right)^2\right)^{1/2} dt \quad -(17)$$

4) These are completely different from eq. (8).

The astronomical measurements of perihelion shift, light deflection, time delay and so forth all rely on intrinsic assumptions. All that can be claimed is that astronomical measurements are becoming more accurate in some respects. This is not a "precision test" of anything.

In the solar system $m(r)$ is well approximated by:

$$m(r) = \left(\frac{E}{mc^2}\right)^2 \left(1 + \left(\frac{L}{mcr}\right)^2\right)^{-1} \quad -(18)$$

A binomial expansion of (18) gives:

$$m(r) \sim \left(\frac{E}{mc^2}\right)^2 \left(1 - \left(\frac{L}{mcr}\right)^2\right) \quad -(19)$$

In an approximately circular orbit

$$L = mvr \quad -(20)$$

so

$$m(r) \sim \left(\frac{E}{mc^2}\right)^2 \left(1 - \left(\frac{v}{c}\right)^2\right) \quad -(20)$$

The Earth's orbital linear velocity around the sun is:

$$v = 2.978 \times 10^4 \, ms^{-1} \quad -(21)$$

so

$$\frac{v}{c} = 9.933 \times 10^{-5} \quad -(22)$$

and

$$\left(\frac{v}{c}\right)^2 = 9.866 \times 10^{-9} \quad -(23)$$

5) Therefore:

$$\left(\frac{v}{c}\right)^2 << 1 \quad -(24)$$

and

$$\boxed{m(r) \rightarrow \left(\frac{E}{mc^2}\right)^2 \left(1 - 9.866 \times 10^{-9}\right)} \quad -(25)$$

The "Schwarzschild" function is:

$$m_s(r) = 1 - \frac{2MG}{c^2 r} \quad -(26)$$

where

$$\frac{2MG}{c^2} = 3 \times 10^3 \text{ metres} \quad -(27)$$

and the mean r is

$$r = 1.496 \times 10^{12} \text{ m} \quad -(28).$$

so

$$m_s(r) = 1 - 2.0 \times 10^{-9} \quad -(29)$$

Therefore the so called precision tests of EGR rely on an incorrect function (29) that is similar to the approximation (25) of Eq. (4). This is the only reason why the function (26) appears to be true - it accidentally comes close to the function (25). To distinguish between (25) and (29) needs a precision of one part in ten power nine - in the ratio E / mc^2.
