1) Note 202(1): Refutation of Line Element of GR.

By consideration of E and L for a metric of the type:

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

it is found that:

$$m(r) = \frac{1}{2}\left(\frac{E}{mc^2}\right)^2\left(1 \pm \left(1 - 4\left(\frac{mc^2}{E}\right)^2\frac{v^2}{c^2}\right)^{1/2}\right) \quad -(2)$$

In the standard theory a null Ricci tensor is used to obtain the result:

$$m(r) = 1 - \frac{r_0}{r} \quad -(3)$$

and this is the only possibility for a line element of type (1). Eqs. (2) and (3) must be the same in the standard theory, in which the velocity is defined by:

$$v^2 = \frac{1}{m(r)}\left(\frac{dr}{dt}\right)^2 + r^2\left(\frac{d\theta}{dt}\right)^2. \quad -(4)$$

Here:

$$\omega = \frac{d\theta}{dt} = \frac{Lc^2}{E}\frac{m(r)}{r^2} \quad -(5)$$

and

$$\frac{dr}{dt} = cb\,m(r)\left(\frac{1}{b^2} - m(r)\left(\frac{1}{a^2} + \frac{1}{r^2}\right)\right)^{1/2} \quad -(6)$$

2)

So:

$$v^2 = c^2 m(r)\left(1 - \left(\frac{mc^2}{E}\right)^2 m(r)\right) \quad -(7)$$

If it is assumed that eq. (3) holds, ~~then~~:

$$\frac{v^2}{c^2} = \left(1 - \frac{r_0}{r}\right)\left(1 - \left(\frac{mc^2}{E}\right)^2\left(1 - \frac{r_0}{r}\right)\right) \quad -(8)$$

$$\xrightarrow[r \to \infty]{} 1 - \left(\frac{mc^2}{E}\right)^2 \quad -(9)$$

i.e

$$E = \gamma mc^2 \quad -(10)$$

where

$$\gamma = \left(1 - \frac{v^2}{c^2}\right)^{-1/2} \quad -(11)$$

which is the result of special relativity.

In general, v does not reduce to zero as $m(r)$ reduces to $\underline{1}$. However, using eq. (9) in eq. (2) gives:

$$m(r) = \frac{1}{2}\left(\frac{E}{mc^2}\right)^2\left(1 \pm \left(1 - 4\left(\frac{mc^2}{E}\right)\left(1 - \left(\frac{mc^2}{E}\right)\right)\right)^{1/2}\right) \quad -(12)$$

which reduces self consistently to unity only if

$$E = mc^2. \quad -(13)$$

This is therefore a basic contradiction. It is resolved only if:

$$m(r) = 1, \quad v = 0 \quad -(14)$$