3rd set of Corrections Relativity, Gravitation and Cosmology 2e

by Ta-Pei Cheng (September, 2010) — one page

- p.336, last expression on the right hand side of Eq (14.83):

  Delete the factor of 4 in the denominator so that the displayed equation reads as

$$\begin{aligned} \Delta\phi &= 2\pi\left(1-\frac{\Omega'}{\Omega}\right) = 2\pi\left[1-\left(1-\frac{3r^*}{2R}\right)^{1/2}\right] \\ &\simeq \frac{3\pi}{2}\frac{r^*}{R} = \frac{3\pi}{c^2}\frac{G_{\rm N}M}{R}. \end{aligned} \tag{14.83}$$

- p.410, first two lines of text on top of the page, just above Eq.(44): Replace the entire sentence as well as change the subscript of the Γ symbol on the left hand side of the first equation in (44) from Γ^r_{rt} to Γ^r_{tt} so that the text and equation together read as

  "From the (t-independent) metric in (42) we can calculate the Christoffel symbols as in (14.32) – but restricted to $r = R$ and $\theta = \pi/2$. The relevant non-vanishing elements are

$$\begin{aligned} \Gamma^r_{tt} &= \frac{r^*}{2R^2}\left(1-\frac{r^*}{R}\right), \quad \Gamma^r_{\phi\phi} = -R\left(1-\frac{r^*}{R}\right), \\ \Gamma^t_{rt} &= \frac{r^*}{2R^2}\left(1-\frac{r^*}{R}\right)^{-1}, \quad \Gamma^\phi_{r\phi} = \frac{1}{R}. \end{aligned} \tag{44}$$

- p.410, left hand sides of Eq.(46) and the not-numbered equation after (46): Insert missing factors of 2 in the second term inside the parenthesis, so the equations should read

$$\frac{dS^r}{dt} - R\Omega\left(1-\frac{3r^*}{2R}\right)S^\phi = 0. \tag{46}$$

  and .....

$$\frac{d^2S^r}{dt^2} - R\Omega\left(1-\frac{3r^*}{2R}\right)\frac{dS^\phi}{dt} = 0$$

- p.410, left hand sides of Eq.(48) and the text following the equation: Insert a missing factor of 2 inside the parenthesis, and add a qualifying clause at the beginning of the paragraph below the equation so that they read as

$$\Omega' = \left(1-\frac{3r^*}{2R}\right)^{1/2}\Omega, \tag{48}$$

  which is given in Eq.(14.80). The simple harmonic oscillator equation (47), ...