238(11): Relativistic Time Evolution of the Hyperbolic Spiral.

In this case:

$$\underline{r}(t) = r(t)\left(\cos\left(\frac{r_0}{r}\right)\underline{i} - \sin\left(\frac{r_0}{r}\right)\underline{j}\right) \quad -(1)$$

where

$$r(t) = \frac{t}{\sqrt{2}}\left(At + \left(A^2t^2 - 4B\right)^{1/2}\right)^{1/2}, \quad -(2)$$

$$A = \left(1 - \left(\frac{L_0}{mr_0c}\right)^2\right)\left(\frac{L_0}{mr_0}\right)^2, \quad -(3)$$

$$B = \left(\frac{L_0}{mr_0c}\right)\left(\frac{L_0}{mr_0}\right)^2 r_0^2. \quad -(4)$$

In this case L_0, r_0, m and c can be coded in as constants. The animation proceeds by plotting (X, Y) as a function of time t.