

January 29, 2019

$$\begin{aligned}
b &= \frac{\sqrt{\frac{M}{R} - \frac{Q^2}{R^2}}}{Rf^{\frac{3}{2}}} \sin(2\omega\tau) \left\{ \left[\left(2 - \frac{13M}{R} + \frac{11Q^2}{R^2} \right) + \frac{1}{2} \left(\frac{3Q^2}{R^2} - \frac{Q^4}{R^4} \right) \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-1} \right. \right. \\
&- \frac{1}{2} \left(\frac{Q^4}{R^4} - \frac{Q^6}{R^6} \right) \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-2} \left. \right] + \frac{a}{R} \sqrt{\frac{M}{R} - \frac{Q^2}{R^2}} \left[\left(17 + \frac{8M}{R} - \frac{3Q^2}{R^2} \right) - \frac{1}{2} \left(\frac{15Q^2}{R^2} - \frac{3Q^4}{R^4} \right) \right. \\
&\left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-1} - \frac{1}{2} \left(\frac{Q^4}{R^4} - \frac{Q^6}{R^6} \right) \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-2} \left. \right] - \frac{a^2}{R^2} \left[\left(5 + \frac{25M}{R} - \frac{21Q^2}{R^2} \right) \right. \\
&- \frac{1}{2} \left(\frac{12Q^2}{R^2} + \frac{3Q^4}{R^4} \right) \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-1} + \frac{1}{2} \left(\frac{2Q^4}{R^4} - \frac{Q^6}{R^6} \right) \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-2} \left. \right] \\
&+ \frac{a^3}{R^3} \sqrt{\frac{M}{R} - \frac{Q^2}{R^2}} \left[23 - \frac{13Q^2}{2R^2} \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-1} - \frac{3Q^4}{2R^4} \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-2} \right] \\
&- \frac{a^4}{R^4} \left[7 - \frac{9Q^2}{2R^2} \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-1} + \frac{Q^4}{2R^4} \left(\frac{M}{R} - \frac{Q^2}{R^2} \right)^{-2} \right] \left. \right\}, \tag{1}
\end{aligned}$$