

## Erratum: Gravitational-wave inspiral of compact binary systems to 7/2 post-Newtonian order [Phys. Rev. D 65, 061501(R) (2002)]

Luc Blanchet, Guillaume Faye, Bala R. Iyer, and Benoit Joguet

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The contribution of tails in the flux of gravitational waves  $\mathcal{L}$  from compact binaries has been incorrectly computed in Refs. [1,2]. As a consequence some post-Newtonian coefficients in the present paper are modified. The correction affects only the  $\nu$ -corrections in the coefficients at 2.5PN and 3.5PN orders. The other coefficients are not modified. Eqs. (8) and (9) are, respectively, changed to

$$\begin{aligned} \mathcal{L}_{\text{tail}} = & \frac{32c^5}{5G} \nu^2 \gamma^5 \left\{ 4\pi \gamma^{3/2} + \left( -\frac{25663}{672} - \frac{125}{8} \nu \right) \pi \gamma^{5/2} + \left( -\frac{116761}{3675} + \frac{16}{3} \pi^2 - \frac{1712}{105} C - \frac{856}{105} \ln(16\gamma) \right. \right. \\ & \left. \left. + \frac{1712}{105} \ln\left(\frac{r}{r_0}\right) \gamma^3 + \left( \frac{90205}{576} + \frac{505747}{1512} \nu + \frac{12809}{756} \nu^2 \right) \pi \gamma^{7/2} \right\}, \end{aligned} \quad (1)$$

$$\begin{aligned} \mathcal{L} = & \frac{32c^5}{5G} \nu^2 x^5 \left\{ 1 + \left( -\frac{1247}{336} - \frac{35}{12} \nu \right) x + 4\pi x^{3/2} + \left( -\frac{44711}{9072} + \frac{9271}{504} \nu + \frac{65}{18} \nu^2 \right) x^2 + \left( -\frac{8191}{672} - \frac{583}{24} \nu \right) \pi x^{5/2} \right. \\ & + \left( \frac{6643739519}{69854400} + \frac{16}{3} \pi^2 - \frac{1712}{105} C - \frac{856}{105} \ln(16x) + \left[ -\frac{11497453}{272160} + \frac{41}{48} \pi^2 + \frac{176}{9} \lambda - \frac{88}{3} \theta \right] \nu \right. \\ & \left. \left. - \frac{94403}{3024} \nu^2 - \frac{775}{324} \nu^3 \right) x^3 + \left( -\frac{16285}{504} + \frac{214745}{1728} \nu + \frac{193385}{3024} \nu^2 \right) \pi x^{7/2} \right\}. \end{aligned} \quad (2)$$

Equations (12), (13) and (14) become

$$\begin{aligned} x = & \frac{1}{4} \tau^{-1/4} \left\{ 1 + \left( \frac{743}{4032} + \frac{11}{48} \nu \right) \tau^{-1/4} - \frac{1}{5} \pi \tau^{-3/8} + \left( \frac{19583}{254016} + \frac{24401}{193536} \nu + \frac{31}{288} \nu^2 \right) \tau^{-1/2} \right. \\ & + \left( -\frac{11891}{53760} + \frac{109}{1920} \nu \right) \pi \tau^{-5/8} + \left( -\frac{10052469856691}{6008596070400} + \frac{1}{6} \pi^2 + \frac{107}{420} C - \frac{107}{3360} \ln\left(\frac{\tau}{256}\right) \right. \\ & + \left[ \frac{15335597827}{3901685760} - \frac{451}{3072} \pi^2 - \frac{77}{72} \lambda + \frac{11}{24} \theta \right] \nu - \frac{15211}{442368} \nu^2 + \frac{25565}{331776} \nu^3 \left. \right) \tau^{-3/4} \\ & \left. + \left( -\frac{113868647}{433520640} - \frac{31821}{143360} \nu + \frac{294941}{3870720} \nu^2 \right) \pi \tau^{-7/8} \right\}. \end{aligned} \quad (3)$$

$$\begin{aligned} \phi = & -\frac{1}{\nu} \left\{ \tau^{5/8} + \left( \frac{3715}{8064} + \frac{55}{96} \nu \right) \tau^{3/8} - \frac{3}{4} \pi \tau^{1/4} + \left( \frac{9275495}{14450688} + \frac{284875}{258048} \nu + \frac{1855}{2048} \nu^2 \right) \tau^{1/8} \right. \\ & + \left( -\frac{38645}{172032} + \frac{65}{2048} \nu \right) \pi \ln\left(\frac{\tau}{\tau_0}\right) + \left( \frac{831032450749357}{57682522275840} - \frac{53}{40} \pi^2 - \frac{107}{56} C + \frac{107}{448} \ln\left(\frac{\tau}{256}\right) \right. \\ & + \left[ -\frac{123292747421}{4161798144} + \frac{2255}{2048} \pi^2 + \frac{385}{48} \lambda - \frac{55}{16} \theta \right] \nu + \frac{154565}{1835008} \nu^2 - \frac{1179625}{1769472} \nu^3 \left. \right) \tau^{-1/8} \\ & \left. + \left( \frac{188516689}{173408256} + \frac{488825}{516096} \nu - \frac{141769}{516096} \nu^2 \right) \pi \tau^{-1/4} \right\}. \end{aligned} \quad (4)$$

$$\begin{aligned}
\phi = & -\frac{1}{32\nu} \left\{ x^{-5/2} + \left( \frac{3715}{1008} + \frac{55}{12} \nu \right) x^{-3/2} - 10\pi x^{-1} + \left( \frac{15293365}{1016064} + \frac{27145}{1008} \nu + \frac{3085}{144} \nu^2 \right) x^{-1/2} \right. \\
& + \left( \frac{38645}{1344} - \frac{65}{16} \nu \right) \pi \ln\left(\frac{x}{x_0}\right) + \left( \frac{12348611926451}{18776862720} - \frac{160}{3} \pi^2 - \frac{1712}{21} C - \frac{856}{21} \ln(16x) \right. \\
& + \left. \left[ -\frac{15335597827}{12192768} + \frac{2255}{48} \pi^2 + \frac{3080}{9} \lambda - \frac{440}{3} \theta \right] \nu + \frac{76055}{6912} \nu^2 - \frac{127825}{5184} \nu^3 \right) x^{1/2} \\
& \left. + \left( \frac{77096675}{2032128} + \frac{378515}{12096} \nu - \frac{74045}{6048} \nu^2 \right) \pi x \right\}, \tag{5}
\end{aligned}$$

The corrections are numerically small. In Table I we find the corrected values  $(-11.7, -20.0, -7.1)$  at 2.5PN, and  $(-0.9, -1.8, -0.8)$  at 3.5PN.

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- [1] L. Blanchet, Phys. Rev. D **54**, 1417 (1996).  
[2] L. Blanchet, Class. Quant. Grav. **15**, 113 (1998).