CORRIGENDUM

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IOP Publishing Classical and Quantum Gravity
Class. Quantum Grav. 33 (2016) 209502 (2pp) doi:10.1088/0264-9381/33/20/209502

Corrigendum: Scalar radiation emitted from a source rotating around a black hole (2000 *Class. Quantum Grav.* 17 19)

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Received 22 June 2016
Accepted for publication 15 September 2016
Published 29 September 2016

Incorrect formulae were used in (35) and (36) for estimating the portion of the radiation emitted to infinity. The correction to these equations has very little effect on figure 5, and does not change the conclusion that almost all radiation is emitted to infinity rather than into the black hole.

The power radiated to infinity should have been computed by coupling the source to the modes radiated to future infinity with no flux going into future horizon. These modes are related to those coming from past infinity with radial functions $\overleftarrow{\psi}^{S}_{\omega l}(r)$ by time reversal. Thus, the power emitted to infinity is obtained by replacing these radial functions by their complex conjugates in the formula for finding the power $\overleftarrow{W}^{S,\mathrm{em}}_{lm}$ (see (17)). Since complex conjugation does not affect the result—this invariance is due to the stationary nature of the orbit of the scalar source—the power emitted to infinity with fixed angular-momentum quantum numbers is simply $\overleftarrow{W}^{S,\mathrm{em}}_{lm}$. Therefore, equations (35) and (36) should be replaced by

$$W^{S,\mathrm{obs}} = \sum_{l=1}^{\infty}\sum_{m=1}^{l} \overleftarrow{W}^{S,\mathrm{em}}_{lm}. \tag{1}$$

The subsequent low-energy approximation for $W^{S,\mathrm{obs}}$ needs to be corrected accordingly. We also note that similar corrections need to be made in [1–6], which used equations similar to (35) and (36) for estimating the portion of the radiation emitted to infinity.

It is interesting to note that $\overleftarrow{\psi}^{S*}_{\omega l}(r) = \overleftarrow{\mathcal{R}}^{*}_{\omega l}\overleftarrow{\psi}^{S}_{\omega l}(r) + \overleftarrow{\mathcal{T}}^{*}_{\omega l}\overrightarrow{\psi}^{S}_{\omega l}(r)$ and hence

$$|\overleftarrow{\psi}^{S*}_{\omega l}(r)|^2 = |\overleftarrow{\mathcal{R}}_{\omega l}|^2\,|\overleftarrow{\psi}^{S}_{\omega l}(r)|^2 + |\overleftarrow{\mathcal{T}}_{\omega l}|^2\,|\overrightarrow{\psi}^{S}_{\omega l}(r)|^2 + 2\,\mathrm{Re}\,[\overleftarrow{\mathcal{R}}^{*}_{\omega l}\overleftarrow{\mathcal{T}}_{\omega l}\,\overleftarrow{\psi}^{S}_{\omega l}(r)\,\overrightarrow{\psi}^{S*}_{\omega l}(r)]. \tag{2}$$

Since $\overleftarrow{\mathcal{T}}_{\omega l} = \overrightarrow{\mathcal{T}}_{\omega l}$, the error corresponded to missing the interference term in this equation.

The authors thank Vitor Cardoso and Leandro Oliveira for raising questions that led to this correction.

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