

Erratum: Extracting linear and nonlinear quasinormal modes from black hole merger simulations [Phys. Rev. D **109, 044069 (2024)]**

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The following corrections need to be noted for the paper.

First, when showing the ratios between excitation factors $|B_{2,2,1}/B_{2,2,0}|$ and $|B_{3,3,1}/B_{3,3,0}|$ in Fig. 10 (purple dotted lines), we used the values B_{SN} computed in the Sasaki-Nakamura formalism presented in Ref. [1]. However, our goal is to compare these ratios with the ones between the quasinormal-mode (QNM) amplitudes extracted from the waveform strain h , which is related to the ψ_4 scalar by $h = -\psi_4/\omega^2$, where ω is the QNM frequency. Therefore, we should use the excitation factors B_{T} computed in the Teukolsky formalism, where the perturbation wave function $\propto \psi_4$, instead of B_{SN} . We should also plot the ratios $|\omega_{2,2,0}^2 B_{2,2,1}/\omega_{2,2,1}^2 B_{2,2,0}|$ and $|\omega_{3,3,0}^2 B_{3,3,1}/\omega_{3,3,1}^2 B_{3,3,0}|$ so that they can be directly compared to the ratio of amplitudes extracted in h instead of ψ_4 . The corrected version of Fig. 10 is presented here. This does not change any of the discussion or conclusions of the paper. We thank the authors of Ref. [2] for pointing out this error.

Next, the symbols η and χ_+ should be swapped in Eqs. (20a) and (20b). The correct equations should read

$$\log_{10}(A_{r2,2,0}/A_{2,2,0}) = 1.168\eta^2 - 1.281\chi_+^2 + 1.983\eta\chi_+ - 6.480\eta - 2.997\chi_+ - 2.584, \quad (20a)$$

$$\log_{10}(A_{r2,1,0}/A_{2,1,0}) = 4.500\eta^2 - 0.6437\chi_+^2 + 1.148\eta\chi_+ - 5.016\eta - 1.568\chi_+ - 1.129. \quad (20b)$$

This error is typographical and does not affect any of the figures or discussion.

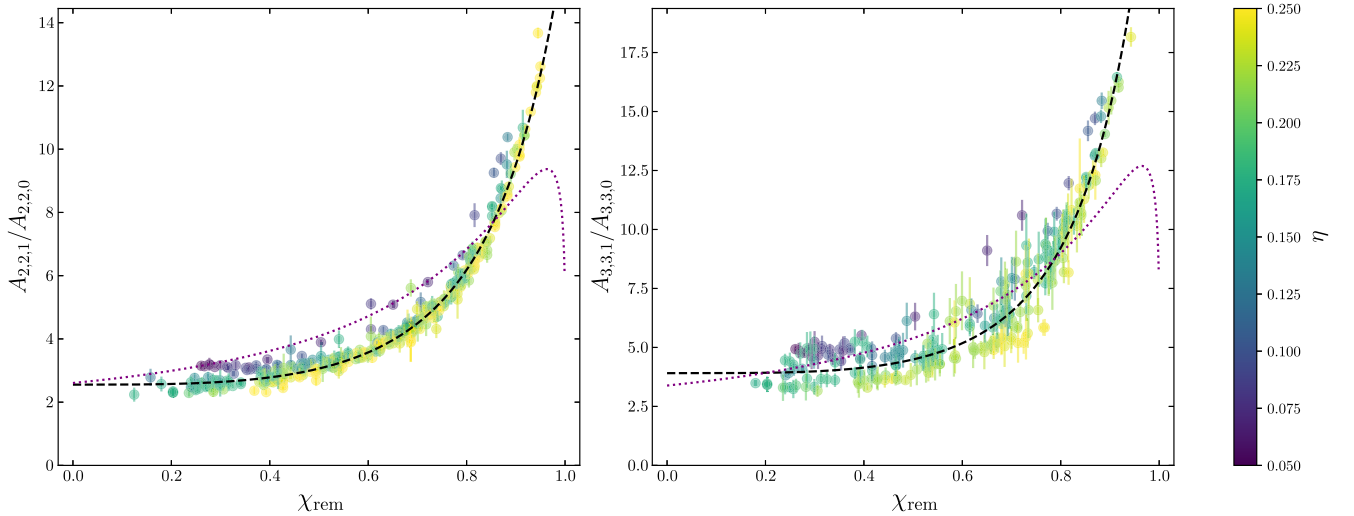


FIG. 10. The ratios $A_{2,2,1}/A_{2,2,0}$ (left) and $A_{3,3,1}/A_{3,3,0}$ (right) as functions of χ_{rem} . The color of the circles corresponds to the value of η for that particular simulation. The black dashed lines are the best-fit curves given in Eqs. (18a) and (18b). The purple dotted lines are the excitation factor ratios $|\omega_{2,2,0}^2 B_{2,2,1}/\omega_{2,2,1}^2 B_{2,2,0}|$ (left) and $|\omega_{3,3,0}^2 B_{3,3,1}/\omega_{3,3,1}^2 B_{3,3,0}|$ (right) adjusted by a factor of $1/\omega_{\ell,m,n}^2$ to convert from ψ_4 to h .

[1] Z. Zhang, E. Berti, and V. Cardoso, *Phys. Rev. D* **88**, 044018 (2013).

[2] K. Mitman *et al.*, [arXiv:2503.09678](https://arxiv.org/abs/2503.09678).