

Abstract Submitted  
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**Robustness of Binary Black Hole Mergers in the Presence of Spurious Radiation**<sup>1</sup> TANJA BODE, DEIRDRE SHOEMAKER, FRANK HERMANN, IAN HINDER, Penn State — We present an investigation into how sensitive the last orbits and merger of binary black hole systems are to the presence of spurious radiation in the initial data. Our numerical experiments consist of a binary black hole system starting the last couple of orbits before merger with additional spurious radiation centered at the origin and fixed initial angular momentum. As the energy in the added spurious radiation increases, the binary is invariably hardened for the cases we tested, i.e. the merger of the two black holes is hastened. The change in merger time becomes significant when the additional energy provided by the spurious radiation increases the  $M_{\text{ADM}}$  of the spacetime by about 1%. While the final masses of the black holes increase due to partial absorption of the radiation, the final spins remain constant to within our numerical accuracy. We conjecture that the spurious radiation is primarily increasing the eccentricity of the orbit and secondarily increasing the mass of the black holes while propagating out to infinity.

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