Abstract Submitted
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The Lazarus Project II: Space-like extraction with the Quasi-Kinnersley tetrad[1] MANUELA CAMPANELLI, The University of Texas at Brownsville, BERNARD KELLY, The University of Texas at Brownsville, CARLOS LOUSTO, The University of Texas at Brownsville — The Lazarus project was designed to make the most of limited 3D binary black-hole simulations, through the identification of perturbations at late times, and subsequent evolution of the Weyl scalar Ψ_4 via the Teukolsky formulation. Here we report on new developments, employing the concept of the "quasi-Kinnersley" (transverse) frame, valid in the full nonlinear regime, to analyze late-time numerical space-times that should differ only slightly from Kerr. This allows us to extract the essential information about the background Kerr solution, and through this, to identify the radiation present. We explicitly test this procedure with full numerical evolutions of Bowen-York data for single spinning black holes, head-on and orbiting black holes near the ISCO regime. These techniques validate previous Lazarus results, provide a measure of the errors intrinsic to the method, and give as a by-product a more robust wave extraction method for numerical relativity.

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