

Abstract Submitted
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Spin Dependence in Computational Black-Hole Data SCOTT HAWLEY, RICHARD MATZNER, MICHAEL VITALO, Center for Relativity, Department of Physics, University of Texas at Austin — We have implemented a parallel multigrid solver, to solve the initial data problem for 3 + 1 General Relativity. This involves solution of elliptic equations derived from the Hamiltonian and the momentum constraints. We use the conformal transverse-traceless method of York and collaborators, which consists of a conformal decomposition with a scalar ϕ that adjusts the metric, and a vector potential w^i that adjusts the longitudinal components of the extrinsic curvature. The constraint equations are then solved for these quantities ϕ , w^i such that the complete solution fully satisfies the constraints. We apply this technique to confirm theoretical expectations for the spin -orientation and -separation dependence in the case of spinning interacting black holes, and we investigate some of the nonlinear effects in initial data for binary black hole interactions.

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