

Abstract Submitted
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Force-free electrodynamics in dynamical curved spacetimes SEAN MCWILLIAMS, West Virginia Univ — We present results on our study of force-free electrodynamics in curved spacetimes. Specifically, we present several improvements to what has become the established set of evolution equations, and we apply these to study the nonlinear stability of analytically known force-free solutions for the first time. We implement our method in a new pseudo-spectral code built on top of the SpEC code for evolving dynamic spacetimes. Finally, we revisit these known solutions and attempt to clarify some interesting properties that render them analytically tractable. Finally, we preview some new work that similarly revisits the established approach to solving another problem in numerical relativity: the post-merger recoil from asymmetric gravitational-wave emission. These new results may have significant implications for the parameter dependence of recoils, and consequently on the statistical expectations for recoil velocities of merged systems.

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