

Abstract Submitted  
for the APR15 Meeting of  
The American Physical Society

**Spectral Cauchy Characteristic Extraction: Gravitational Waves and Gauge Free News** CASEY HANDMER, BELA SZILAGYI, California Institute of Technology, JEFF WINICOUR, University of Pittsburg — We present a fast, accurate spectral algorithm for the characteristic evolution of the full non-linear vacuum Einstein field equations in the Bondi framework. Developed within the Spectral Einstein Code (SpEC), we demonstrate how spectral Cauchy characteristic extraction produces gravitational News without confounding gauge effects. We explain several numerical innovations and demonstrate speed, stability, accuracy, exponential convergence, and consistency with existing methods. We highlight its capability to deliver physical insights in the study of black hole binaries.

Casey Handmer  
California Institute of Technology

Date submitted: 23 Dec 2014

Electronic form version 1.4