Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Surrogate models of precessing numerical relativity gravitational waveforms for use in parameter estimation JONATHAN BLACKMAN, Caltech, SCOTT FIELD, Cornell, CHAD GALLEY, DANIEL HEMBERGER, MARK SCHEEL, PATRICIA SCHMIDT, RORY SMITH, Caltech, SXS COLLABORATION COLLABORATION — We are now in the advanced detector era of gravitational wave astronomy, and the merger of two black holes (BHs) is one of the most promising sources of gravitational waves that could be detected on earth. To infer the BH masses and spins, the observed signal must be compared to waveforms predicted by general relativity for millions of binary configurations. Numerical relativity (NR) simulations can produce accurate waveforms, but are prohibitively expensive to use for parameter estimation. Other waveform models are fast enough but may lack accuracy in portions of the parameter space. Numerical relativity surrogate models attempt to rapidly predict the results of a NR code with a small or negligible modeling error, after being trained on a set of input waveforms. Such surrogate models are ideal for parameter estimation, as they are both fast and accurate, and have already been built for the case of non-spinning BHs. Using 250 input waveforms, we build a surrogate model for waveforms from the Spectral Einstein Code (SpEC) for a subspace of precessing systems.

Jonathan Blackman
Caltech

Date submitted: 08 Jan 2016 Electronic form version 1.4