Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Improving the Sensitivity of Searches for Continuous Gravitational Waves from Galactic Neutron Stars in Binary Systems ANSEL NEUNZERT, KEITH RILES, University of Michigan, LIGO SCIENTIFIC COLLABORATION — While non-axisymmetric spinning neutron stars are expected to emit nearly monochromatic gravitational radiation, such stars in binary systems emit frequency-modulated waves. For a previously unknown binary source, the modulations require a large expansion of the parameter space in searches for the emitted waves. TwoSpect is a previously developed search method for gravitational waves from neutron stars in binaries, which makes use of templates placed in the parameter space of interest. For searches over large parameter space regions, where a fully templated approach would be too computationally demanding, TwoSpect uses a pre-template stage, at the cost of sensitivity loss. Here, we discuss a method of analysis with TwoSpect which bypasses the pre-template stage, but samples parameter space more sparsely than a fully templated search, to achieve an intermediate balance of sensitivity and computational cost. This method aims to make directed, templated searches with TwoSpect more computationally feasible, and may prove useful in all-sky searches.

Ansel Neunzert
University of Michigan

Date submitted: 08 Jan 2016 Electronic form version 1.4