Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Hunting for continuous gravitational waves from unknown neutron stars in binary systems in Advanced LIGO data EVAN GOETZ, Max Planck Institute for Gravitational Physics, Hannover, LIGO SCIENTIFIC COLLABORATION, VIRGO COLLABORATION — Non-axisymmetric, rapidly rotating neutron stars are predicted to emit quasi-monochromatic gravitational waves. Accretion from a companion star may drive asymmetries of the neutron star causing it to emit gravitational waves, perhaps even after accretion has subsided. Searching for unknown sources in binary systems is a significant computational challenge. In this talk, I will describe a search method, called TwoSpect, that has been developed to search for unknown sources in binary systems; show results from the TwoSpect search of initial LIGO/Virgo data; describe recent improvements to TwoSpect and other semi-coherent methods; and provide an outlook on TwoSpect searches in the advanced detector era.

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Date submitted: 27 Sep 2016 Electronic form version 1.4