Contribution ID: **83** Type: **not specified**

Probing the neutron star equation of state with second-generation gravitational wave detectors

Friday 28 March 2014 15:40 (20 minutes)

Fisher matrix and related studies have suggested that with second-generation gravitational wave detectors, it may be possible to infer the equation of state of neutron stars using tidal effects in binary inspiral.
Here we present the first fully Bayesian investigation of this problem.
We simulate a realistic data analysis setting by performing a series of numerical experiments of binary neutron star signals hidden in detector noise, assuming the projected final design sensitivity of the Advanced LIGO-Virgo network.
With an astrophysical distribution of events (in particular, uniform in co-moving volume), we find that only a few tens of detections will be required to arrive at strong constraints, even for some of the softest equations of state in the literature.
Thus, direct gravitational wave detection will provide a unique probe of neutron star structure.

Author: AGATHOS, Michalis

Co-authors: Dr VAN DEN BROECK, Chris (Nikhef); Dr VITALE, Salvatore (MIT); Dr LI, Tjonnie (Caltech); Dr DEL POZZO, Walter (Unversity of Birmingham)

Presenter: AGATHOS, Michalis

Session Classification: Afternoon session - Parallel A