GR 8: Gravitational Waves

Time: Wednesday 11:45–12:25   Location: GR-H2

GR 8.1   Wed 11:45   GR-H2

On the accuracy of gravitational-wave observations — •Frank Ohme — Max-Planck-Institut für Gravitationsphysik (AEI), Hannover, Deutschland — Leibniz-Universität Hannover, Deutschland

The catalogue of gravitational-wave observations continues to grow with every LIGO-Virgo observing run. Nearly 100 signals from compact binary mergers have been identified in the first three runs. Each signal's source properties are determined by comparing theoretical models with the data. This process is subject to two categories of uncertainties (or errors): statistical errors account for the presence of detector noise; systematic errors arise from inaccuracies of the signal models. I this talk, I will highlight ways to measure and compare the two sources of errors and assess how they impact current and future gravitational-wave observations.

GR 8.2   Wed 12:05   GR-H2

Dynamical tides and gravitational scattering — •Jan Steinhoff — Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany

Gravitational wave astronomy offers a promising tool to infer the nuclear physics of neutron stars from observations of inspiraling and merging binaries. This talk addresses the necessity to accurately model dynamical tidal effects during the inspiral, for instance the resonant excitation of neutron star oscillation modes, for the era of third generation detectors. For this purpose, a fully relativistic effective-field-theory model for tidal effects is put forward. Gravitational scattering is discussed as a promising Gedanken experiment to determine the tidal parameters of the model, and for modeling binary systems in general.