The physics of compact objects and experimental improvements on detectors in the gravitational-wave era

April 10, 2017

1 OBSERVABLES IN COMPACT OBJECTS (NEUTRON STARS)

1.1 Traditional E&M signatures: burning ashes in Type-I X-ray bursts

1.2 Gravitational wave signatures: tidal interactions in coalescing binary NS

1.2.1 Superfluid effects in npeμ NS

1.2.2 NS with hyperons in the inner core

1.3 Other theoretical works?

2 IMPROVING THE PERFORMANCE OF GW DETECTORS

2.1 LIGO commissioning: alignment sensing and control

2.1.1 Aligning the signal-recycling cavity

2.1.2 Other commissioning work: interferometer power-up, mitigating scattering?

2.2 GWcleaning: feed-forward noise cancellation

2.3 Enhanced-χ^2 glitch vetoing scheme

2.4 Lab-scale projects: coating thermal noise, VOPO (squeezing)