

MAS17-2017-000055

Abstract for an Invited Paper
for the MAS17 Meeting of
the American Physical Society

Dawn of gravitational-wave astronomy: recent results from LIGO and Virgo

BANGALORE SATHYAPRAKASH, Penn State

LIGO concluded its second observing run on 25 August 2017. During August 1-25 the two LIGO detectors and the Virgo detector in Italy took data in coincidence. In this talk I will summarise results from the second observing run. LIGO's observations of binary black holes have begun to impact astrophysical models of the formation and evolution of compact binaries and facilitated tests of general relativity in a regime where the theory had not been tested before. In addition to binary black holes we also expect to observe binaries in which one, or both, of the companions is a neutron star and the other is possibly a black hole. Observing the full spectrum of binaries will help us understand the origin of short gamma-ray bursts, measure the equation-of-state of dense nuclear matter, test the no-hair theorem for black holes and map the cosmic history of the formation and growth of light black hole seeds. Gravitational wave observations could also reveal processes that operate in core collapse supernovae and the mechanism of core bounce and formation of neutron stars and black holes.