

Astrophysics from multi-messenger observations

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Prof Heng performs research at the forefront of fundamental physics with observations that will uncover the mysteries that lie in the darkest, densest regions of the Universe. His main research focuses on transient gravitational wave detection (eg. from merging binary neutron stars and core-collapse supernovae) and astrophysics. He was awarded the Royal Society of Edinburgh's President's Medal in 2016 for his leadership of the group which, based on many years of background research, made the first observation of a gravitational wave signal.



There are now over 90 confident detections of compact binary coalescences from the first 3 observing runs by Advanced LIGO and Virgo. This includes the gravitational wave signal from a binary neutron star merger (GW170817) which was observed in conjunction with a very weak short gamma-ray bursts (GRB 170817A) as well as subsequent emissions across the electromagnetic spectrum. These multi-messenger observations provide a revealing glimpse into the complex astrophysics behind short gamma-ray bursts. This presentation will present an overview of multi-messenger activities at the University of Glasgow, including a joint analysis of gamma-ray burst and binary neutron star event rates and the potential implications on cosmology and astrophysics.

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