



Astronomy Program Opening Workshop August 22-26, 2016

John Veitch

University of Birmingham

“Gravitational Wave Astronomy with Ground-based Detectors”

The detection by LIGO of gravitational waves from coalescing binary black holes was a milestone discovery in physics and astronomy, representing a decades-long effort to build and operate the ground-based gravitational wave observatories. These instruments are among the most sensitive measuring devices ever constructed, but as well as detecting gravitational waves their data is polluted with a multitude of environmental and fundamental noises. Analyzing this noisy data is one of the main challenges in detecting the very weak gravitational wave signals, and the proper interpretation of the data requires a good understanding of the noise in order to make astrophysical inferences. I will review the data analysis strategies used by the LIGO Scientific Collaboration to make the first detections, and highlight areas where future detections can benefit from new developments in data analysis and statistical modelling.