About one year ago, the Advanced LIGO detectors sensed the passing of gravitational wave signal GW150914 from the merger of two black holes, each roughly 30 solar masses. This discovery ushered in a new era of gravitational wave astronomy. It was the first direct detection of gravitational waves and provided evidence of black holes with masses never before observed. Roughly three months later, the LIGO detectors observed a second binary black hole merger, GW151226, with strong evidence of black hole spin.

This talk will focus on the interface between gravitational wave astrophysics and instrumentation. The LIGO detectors have unprecedented sensitivity to spacetime strain, but the interferometer data are not perfectly clean. The LIGO Scientific Collaboration has a strong history of detector characterization work that studies the causes of noise artifacts in the data and their effect on the recovery of astrophysical signals. I will show the impact of detector characterization efforts on searches for compact binary coalescences during Advanced LIGO’s first observing run. I will also illustrate that noise characterization will become increasingly important, particularly for extracting the astrophysical parameters of detected sources, as LIGO improves in sensitivity and the global gravitational wave community fields an increasing rate of detections.

Bio: Dr. McIver is a postdoctoral scholar in experimental physics at California Institute of Technology. She was based at the LIGO-Livingston detector in Louisiana at the time of the gravitational waves discoveries. She wrote her dissertation on detecting gravitational waves with Advanced LIGO and received her Ph.D. in physics from the University of Massachusetts-Amherst in 2015.