

2017-2018 Astrophysics Seminar Series

Rattle and Shine: Joint Detection of Gravitational Waves and Light from the Binary Neutron Star Merger GW170817

The much-anticipated joint detection of gravitational waves and electromagnetic radiation was achieved for the first time on August 17, 2017, for the binary neutron star merger GW170817. This event was detected by Advanced LIGO/Virgo, gamma-ray satellites, and dozens of telescopes on the ground and in space spanning from radio to X-rays. In this talk I will describe the exciting discovery of the optical counterpart, which in turn led to several detailed studies across the electromagnetic spectrum. The results of the observations carried out by our team include the first detailed study of a "kilonova", an optical/infrared counterpart powered by the radioactive decay of r-process nuclei synthesized in the merger, as well as the detection of an off-axis jet powering radio and X-ray emission. These results provide the first direct evidence that neutron star mergers are the dominant site for the r-process and are the progenitors of short GRBs. I will also describe how studies of the host galaxy shed light on the merger timescale, and describe initial constraints on the Hubble Constant from the combined GW and EM detection.

Tuesday, April 17 at 3:30PM
725 Commonwealth Avenue
Room 502



Edo Berger
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