HSRGC Colloquium

Neutron Star Mergers: The Light After the Gravitational Waves

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Abstract

The first-ever neutron star merger observed through its gravitational wave emission, GW170817, was followed by a short duration gamma-ray burst (GRB). At longer time scales the source exhibited thermal and non-thermal optical, radio and X-ray emission related to matter ejected during and after the merger and its subsequent interaction with ambient gas. This ground-breaking discovery, not only proves that short-duration GRBs originate from the merger of neutron stars but allows us, for the first time, to directly probe the structure of the relativistic jet produced in these events. In this talk, I will discuss the lessons learned from this event and the prospects for the detection of electromagnetic signals following future gravitational-wave detections of neutron star mergers and their potential in constraining cosmological parameters. I finish with a surprise that GW170817 has had in store for us at the time of the writing of this abstract.