

Gamma-Ray Bursts Serve as Beacon for Finding More Nearby Neutron Star Mergers



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What is the science question?

Are there other short gamma-ray bursts similar to the one discovered last year that marked the first joint detection of light and gravitational waves from the same source (GRB 170817A)?

What were your findings?

Yes, GRB 170817A was not unique. In fact, GRB 150101B has similar gamma-ray properties, although the jet produced by GRB 150101B probably pointed more directly at Earth than GRB 170817A.

What is the impact?

If the unique gamma-ray characteristics in GRBs 150101B and 170817A are common, we may be able to identify these nearby mergers immediately -- from gamma-ray observations alone -- to aid the search for kilonovae. This is significant because the LIGO/Virgo gravitational-wave observatories are often offline, so we cannot depend solely on gravitational-wave observations.

Why does it matter to non-scientists?

Neutron star mergers are natural extreme physics labs with environments unobtainable on Earth, so identifying which ones are nearby allows us to study them in greater detail.

Gamma-ray Burst

Both GRB 170817A and GRB 150101B had similar gamma-ray signatures.

