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A Bayesian View into Merger Jets: Multimessenger Constraints from GW170817, GW190425, and Short GRB Observations

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The joint discovery of the binary neutron star (BNS) merger GW170817 and the associated short gamma-ray burst GRB170817A has shed new light on the study of such systems. In this work, assuming all BNS mergers produce GRBs, we aim to investigate the jet geometry of short gamma-ray bursts through a multimessenger approach. Our analysis incorporates observations from two BNS merger events, GW170817 and GW190425, as well as the gamma-ray prompt emission of GRB170817A and its subsequent X-ray afterglow. Additionally, we include the observed rate of short GRBs from a decade of Swift telescope operations to constrain the BNS merger rate.

Section

Primary author: LIN, En-Tzu (National Tsing Hua University)

Co-authors: HAYES, Fergus (School of Physics and Astronomy, University of Glasgow); LAMB, Gavin (Astrophysics Research Institute, Liverpool John Moores University); HENG, Ik Siong (School of Physics and Astronomy, University of Glasgow); KONG, Albert

Presenter: LIN, En-Tzu (National Tsing Hua University)

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