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Searching for Fermi Short Gamma-Ray Bursts with DDOTI and Tomo-e Gozen

Tuesday, 6 July 2021 07:00 (20 minutes)

Neutron-star mergers and their remnants are fascinating both as laboratories for physics at high energies and densities and because of their likely importance for the production of heavy elements. There are several approaches to observing these mergers. First, we can locate the EM counterparts of neutron-star GW events. This was spectacularly successful with GW170817, but despite huge efforts this remains the only GW event whose EM counterpart has been identified. This approach is now on hold until the resumption of GW observations, possibly in 2022. Second, we can study short gamma-ray bursts (SGRBs) detected and localized by the Swift satellite. Here we discuss a third approach, localizing SGRBs detected by the Fermi satellite. Enticingly, while Swift detects only about 10 SGRBs per year, Fermi detects about 45. The challenge is improving the detection localization from 10 degrees to 1 arcsec to allow deep observations with large telescopes. We will present our ongoing collaborations to do this with the Deca-Degree Optical Transients Imager (DDOTI), a wide-field telescope at the Observatorio Astronómico Nacional in Mexico, and with the Tomo-e Gozen wide-field camera on the Kiso Schmidt telescope of the University of Tokyo.

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