

**Space Science Seminar
Tuesday, 2022 July 12**

2:00 p.m.

NASA/MSFC TEAMS/NSSTC Room 2096

Catching the Next Wave: Search for Gamma-ray Counterparts to Gravitational-wave Events from the Third Observing Run with Fermi-GBM and Swift-BAT

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Host: Dr. Joshua Wood (Sponsored by NASA/MSFC/ST12)

The detection of gravitational waves (GWs) from a merger of two neutron stars (GW170817) and their short gamma-ray burst counterpart (GRB 170817A) introduced new ways to explore a number of long-standing questions in astronomy (e.g., the origins of heavy elements or the nature of the environments of particle acceleration in the Universe.) No other counterpart detection to a gravitational wave event has been confirmed to date. We present an offline, follow-up search for excess emission of gamma-rays with the Fermi Gamma-ray Burst Monitor (Fermi-GBM) and Swift Burst Alert Telescope (Swift-BAT), in spatial and temporal correspondence to gravitational-wave events reported by the LIGO/Virgo/Kagra (LVK) Collaboration in their third observing run (O3). We utilize Fermi-GBM on-board triggers and sub-threshold searches in combination with Swift-BAT rate data to look for any gamma-ray excess associated with GW events detected in O3. We report no new joint detections to date; however, we place flux upper-limits, allowing us to explore constraints on the current theoretical models describing the production of gamma-rays in these environments.