

Realtime Gamma Ray Neutrino Coincident Analyses with AMON

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The existence of a high-energy diffuse astrophysical neutrino flux has recently been confirmed by the IceCube Neutrino Observatory, but in the absence of any high-confidence counterparts the nature of the sources of these high-energy neutrinos is still unknown. Several candidate neutrino source populations, such as Gamma-ray Bursts and Blazar Flares predict a prompt gamma-ray emission along with the neutrino emission. Searches for multimessenger signals such as these are the main goal of the Astrophysical Multimessenger Observatory Network (AMON), which is currently under development at Penn State.

AMON will connect observatories from around the world, enabling realtime coincidence searches using sub-threshold data of all four messengers (neutrinos, cosmic rays, gamma rays, and gravitational waves) and rapid followup of these alerts. Searching for statistically significant spatial and temporal coincidences allows us to lower the false positive rate and effectively dive deep down into these high-background data streams. This talk will focus on the realtime analyses in the works for neutrino and gamma ray coincidences, primarily focusing on using subthreshold triggers from Swift's Burst Alert Telescope (BAT) and neutrinos from IceCube.

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