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Search for Astrophysical Neutrino Transients with IceCube DeepCore

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DeepCore, as a densely instrumented sub-detector of IceCube, extends IceCube's energy reach down to about 10 GeV, enabling the search for astrophysical transient sources, e.g., choked gamma-ray bursts. While many other past and on-going studies focus on triggered time-dependent analysis, we aim to utilize a newly developed event selection and dataset for an untriggered all-sky time-dependent search for transients. In this work, all-flavor neutrinos are used, where neutrino types are determined based on the topology of the events. We extend the previous DeepCore transient half-sky search to an all-sky search and focus only on short timescale sources (with a duration of 10^2 ~ 10^5 seconds). All-sky sensitivities to transients in an energy range from 10 GeV to 300 GeV will be presented in this poster. We show that DeepCore can be reliably used for all-sky searches for short-lived astrophysical sources.

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