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Search for Magnetic Monopoles with the NOvA Far Detector

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The NOvA experiment aims to study the mixing behavior of neutrinos and will attempt to resolve the neutrino mass hierarchy. The construction and instrumentation of the 14 kT far detector finished in 2014. Due to its surface proximity, large surface area, and continuous readout, the NOvA far detector is sensitive to the detection of magnetic monopoles which would be highly ionizing particles traversing the entire detector. In order to record candidate magnetic monopole events with high efficiency and low trigger rate, we have designed a software-based trigger to make decisions based on the data recorded by the detector. The decisions must be fast, have high efficiency, and a large rejection factor for the over 100,000 cosmic rays that course through the detector every second. In this poster, we will describe the off-beam triggering system implemented for monopole detection together with a first look at the collected data.

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