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The NOvA Experiment at Fermilab

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The NOvA Experiment at Fermilab is a long baseline accelerator neutrino experiment designed to measure neutrino flavor oscillations. The NOvA detectors began commissioning and collecting initial data in November 2011 and completed construction in July 2014. The experiment features a highly segmented, “totally active”, 14 kT Far Detector optimized for the detection of ν_e interactions and their resultant electromagnetic showers. The far detector’s unique streaming readout, combined with a data-driven triggering system, allow it to access a wide array of other physics, including cosmic ray measurements. The NOvA detector is capable of the detection, reconstruction and measurement of high multiplicity cosmic-ray showers and cosmic ray induced events with an exposure rate unprecedented for tracking calorimeters of this scale. In addition, the experiment’s full data stream is buffered by the data acquisition systems, providing an exceedingly long, 30 minute deep, trigger decision window, allowing the experiment to participate in the Super Nova Early Warning System (SNEWS) effort to study the neutrino signal from any nearby supernova that occur during the experiment’s lifespan.

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