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Astrophysics with NOvA

The NOvA neutrino experiment, designed to measure electron neutrino appearance in a muon neutrino beam, also has a wide-reaching astrophysics program as a result of its unique size, granularity and position. Unlike previous long-baseline neutrino experiments, the 14kt NOvA far detector is on the surface, which enables a search for a low-mass monopole component of cosmic rays. Despite $\sim 150\text{kHz}$ of cosmic rays, our detector's fine-grained nature and flexible DAQ allows a search for upward-going muons caused by dark matter annihilation in the Sun, a study which is particularly sensitive to lower mass WIMP models. We also have several studies of the cosmic ray flux at both our near and far detectors. Our supernova system is presented in a separate poster. Finally, we are sensitive to potential signals from the MeV to TeV range that may come in coincidence with LIGO/Virgo gravitational wave events.

Mini-abstract

The astrophysics program of the NOvA neutrino experiment.

Experiment/Collaboration

NOvA

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