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System for on-Axis Neutrino Detection (SAND) as part of the DUNE near detector

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In order to achieve a precise measurement of the leptonic CP violation phase, Deep Underground Neutrino Experiment (DUNE) will employ four 10 kt scale far detector modules and a near detector complex.

In the near detector complex, a System for on-Axis Neutrino Detection (SAND) is located downstream of a liquid-argon TPC (LAr) and a high pressure gaseous-argon TPC (GAr). SAND consists of an inner tracking system, surrounded by the KLOE superconducting magnet with an electromagnetic calorimeter inside. Due to the high event rate and accurate neutrino energy reconstruction capability, SAND can serve as a good beam monitor. Besides, SAND provides comprehensive measurements on non-Ar targets allowing constraints on the A-dependence of neutrino interaction models. In addition, with the capability of neutron kinetic energy detection, a full reconstruction of neutrino interaction would be possible, which opens new ways to analyze the events. In this talk, a number of physics studies and the latest design of SAND will be presented.

Are you are a member of the APS Division of Particles and Fields?

Yes

Primary author: YANG, Guang (Stony Brook University)

Presenter: YANG, Guang (Stony Brook University)

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