

## New Trends in High-Energy Physics



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### Sterile neutrino searches with the ICARUS detector

The 760 ton ICARUS T600 detector performed a successful three-year physics run at the underground LNGS laboratories studying neutrino oscillations with the CNGS neutrino beam from CERN, and searching for atmospheric neutrino interactions. ICARUS performed a sensitive search for LSND like anomalous  $\nu_e$  appearance in the CNGS beam, which contributed to constrain the allowed parameters to a narrow region around  $\Delta m^2 \sim \text{eV}^2$ , where all the experimental results can be coherently accommodated at 90% C.L. After a significant overhauling at CERN, the T600 detector has now been placed in its experimental hall at Fermilab. It will be soon exposed to the Booster Neutrino Beam to search for sterile neutrino within the SBN program, devoted to definitively clarify the open questions of the presently observed neutrino anomalies.

The proposed contribution will address ICARUS achievements, its status and plans for the new run and the ongoing analyses also finalized to the next physics run at Fermilab.

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