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The ICARUS T600 detector at LNGS underground laboratory

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ICARUS (Imaging Cosmic And Rare Underground Signals) is the the largest Liquid Argon Time Projection Chamber (LAr-TPC) in the world (containing ~600 tons of LAr) addressed to the study of “rare events” and, among these, neutrino interactions.

Installed in the Gran Sasso National Laboratory (INFN-LNGS, Italy), ICARUS started working gradually since May 27th of the last year, collecting data both from the cosmic rays able to reach the depths of the laboratory and from neutrino interactions from the CNGS beam.

The detector, providing a completely uniform imaging and calorimetry with a high accuracy on massive volumes, allows to reconstruct in real time neutrino and cosmic interactions, measuring the full kinematics of the identified particles.

The ICARUS technology can be considered as a milestone towards the realization of next generation of massive detectors (~tens of ktons) for neutrino and rare event physics.

The detection technique principle will be illustrated;

detector main features and performances will be described, with particular emphasis on cryogenics and LAr purity; examples of neutrino events reconstruction will be shown.

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