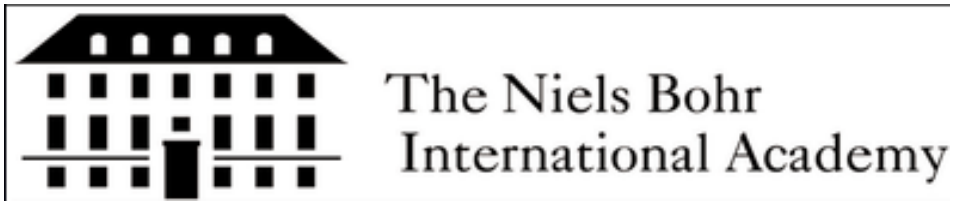

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ICARUS T600 experiment: latest results and perspectives

Wednesday 25 June 2014 17:00 (20 minutes)

The ICARUS (Imaging Cosmic And Rare Underground Signals) experiment employs the liquid Argon Time Projection Chamber (LAr TPC) technique to study Long Baseline (LBL) neutrino oscillations and rare event physics. The ICARUS T600 detector, filled with 760 tons of LAr, is placed in the underground laboratory of Gran Sasso (LNGS). It took data from 2010 to 2012 with the CNGS (Cern Neutrino to Gran Sasso) beam and, after the shutdown of this beam, it continued to collect data from cosmic rays up to June 2013, when the detector decommissioning phase began. Thanks to the LAr properties, the T600 detector allows combining the remarkable imaging capability of a bubble chamber with an excellent reconstruction of the energy deposited by charged particles.
The main purpose of this experiment is to study neutrino oscillations in an almost pure νμ beam. Latest results, here presented, are related to the νμ->νe oscillation signal possibly due to LSND anomaly, related to the hypothesis of the existence of a sterile state in the neutrino sector.
To clarify this issue, a new phase of the experiment is foreseen, which will be characterized by the realization of a ~ 1 T magnetic field inside the LAr active volume. In view of this scenario, a new software algorithm is going to be implemented for the automatic classification of electrons and positrons coming from neutrino charged current interactions that will occur in the detector.

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