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Neutrino reconstruction analysis at ICARUS detector

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Liquid Argon Time Projection Chamber (LArTPC) detectors offer charged particle imaging capability with impressive spatial resolution. Precise event reconstruction procedures are mandatory in order to fully exploit the potential of this technology.

After a successful three-year physics run at the underground LNGS - INFN laboratory, ICARUS was refurbished and subsequently moved to Fermilab to begin to operate as the far detector in the Short-Baseline Neutrino Program (SBN). ICARUS has entered the physics run phase and is presently collecting large statistical samples for its proposed physics analysis program.

In this presentation we will show ICARUS event selection, reconstruction and analysis algorithms that are currently being used. First studies have been performed with a well defined sample of ν_μ CC quasi elastic interactions, showing promising and robust results of fully reconstructed neutrino events. Detailed investigations are undergoing on particle identification, particle vs shower discrimination, calibration corrections and many other topics, which will be reported here.

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