

Defining and executing cryogenic systems for DUNE

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The Deep Underground Neutrino Experiment (DUNE) foreseen to be installed at the Sanford Underground Research Facility (SURF) in Lead, SD, USA, involves Time Projection Chambers housed in four liquid argon cryostats with a total liquid argon volume of about 50,000 m³, installed in underground caverns at about 1.5 km below the surface. Largest of its kind, DUNE involves several challenges for the development of the cryostats and the cryogenic system among which the safety, the argon bath stability and the purity. An extensive prototyping programme paved the way towards the design and construction of the DUNE first cryostat and associated cryogenic system due to start operation in 2027.

This presentation gives an overview of the management and development plan implemented for ProtoDUNE which serves as a basis for the development of the management plan for the CERN ATS-TE contribution to the DUNE Project. Specificities linked to the (CERN-DUNE) collaboration framework are highlighted. These practices build on the team past experience on similar cryogenic projects, the approach being to adopt a methodology and a level of formalism appropriate to efficiently deliver the cryogenic system, with the allocated resources.

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