



Contribution ID: 45

Type: **Oral presentation (15min)**

## **Performance and Results of the LBNE 35 ton Membrane Cryostat Prototype**

*Thursday, 10 July 2014 15:15 (15 minutes)*

We report on the performance and commissioning of the first membrane cryostat to be used for scientific application. The Long Baseline Neutrino Experiment (LBNE) has designed and fabricated a membrane cryostat prototype in collaboration with Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI). LBNE has designed and fabricated the supporting cryogenic system infrastructure and successfully commissioned and operated the first membrane cryostat. Original goals of the prototype are: to demonstrate the membrane cryostat technology in terms of thermal performance, feasibility for liquid Argon and leak tightness; to demonstrate that we can remove all the impurities from the vessel and achieve the purity requirements in a membrane cryostat without evacuation; to demonstrate that we can achieve and maintain the purity requirements of the liquid Argon using mol sieve and copper filters. The purity requirements of a large liquid Argon detector such as LBNE are contaminants below 200 parts per trillion Oxygen equivalent.

LBNE is planning the design and construction of a large liquid argon detector. This presentation will present requirements, design and construction of the LBNE 35 ton membrane cryostat prototype, and detail the commissioning and performance. The experience and results of this prototype are extremely important for the development of the LBNE detector.

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**Session Classification:** Thu-Af-Orals Session 14

**Track Classification:** C-05: Cryostat technology