detector seminar

SPEAKER: Kostas Mavrokoridis

TITLE: **ARIADNE: A 1-ton dual-phase LArTPC with optical readout.**

DATE: 14 Jun 2019, 11:00

PLACE: 13-2-005

ABSTRACT

ARIADNE is a 1-ton two-phase liquid argon (LAr) time projection chamber (TPC) featuring a novel optical readout method. The detector uses a Thick Gas Electron Multiplier (THGEM) in the extraction region to generate secondary scintillation light which is imaged using 4 Electron-Multiplying (EM)CCD cameras to produce high resolution images of particle interactions within the detector. This approach has many potential improvements over current readout techniques. A combination of the high level of gain achievable in the THGEM and the single-photon sensitivity of the EMCCDs give's sensitivity at low energies. ARIADNE underwent testing and commissioning runs in Liverpool at the end of 2017, followed by a beam line test at the CERN East Area in 2018. This was the first beam line test of an optical dual phase TPC for a detector of this scale. Initial results from these tests will be presented. Further work has been carried out into integrating an optical Timepix3 based camera into the detector providing very fast readouts and true 3D reconstruction. These technologies have the potential to be used at future large-scale LArTPC experiments.

Organised by: Burkhard Schmidt (EP-DT)