

Lundi 12/11/2018, 11h00

CEA-Saclay Bât. 141, salle André Berthelot

3D track finding for MicroBooNE's deep learning based event reconstruction chain

ADRIEN HOURLIER

MIT

MicroBooNE is a Liquid Argon Time Projection Chamber (LArTPC) neutrino experiment on the Booster Neutrino Beamline at the Fermi National Accelerator Laboratory, with an 85-tonne active mass. One of MicroBooNE's primary physics goals is to investigate the excess of electron neutrino events seen by MiniBooNE in the [200-600] MeV range. MicroBooNE will constrain the intrinsic electron neutrino component of the beam by measuring the muon neutrino spectrum. Our low-energy excess analysis makes use of deep learning algorithms applied to the high-resolution images provided by the MicroBooNE LArTPC. I will present a novel 3D event reconstruction based on computer vision tools and a stochastic search algorithm, yielding a 2.5% energy resolution for $1\mu 1p$ muon neutrino interactions in the [200-1500] MeV range. I will then present validation studies verifying the good agreement of our simulation to our muon neutrino data.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Martine Oger, tél. 01 69 08 23 50, e-mail : martine.oger@cea.fr. (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).