SES08-2008-000256

Abstract for an Invited Paper
for the SES08 Meeting of
the American Physical Society

Accelerator-based Neutrino Physics at Fermilab

EDMOND DUKES, University of Virginia

The discovery of neutrino mass has excited great interest in elucidating the properties of neutrinos and their role in nature. Experiments around the world take advantage of solar, atmospheric, reactor, and accelerator sources of neutrinos. Accelerator-based sources are particularly convenient since their parameters can be tuned to optimize the measurement in question. At Fermilab an extensive neutrino program includes the MiniBooNE, SciBooNE, and MINOS experiments. Two major new experiments, MINERvA and NOvA, are being constructed, plans for a high-intensity neutrino source to DUSEL are underway, and an R&D effort towards a large liquid argon detector is being pursued. The NOvA experiment intends to search for electron neutrino appearance using a massive surface detector 811 km from Fermilab. In addition to measuring the last unknown mixing angle, theta(13), NOvA has the possibility of seeing matter-antimatter asymmetries in neutrinos and resolving the ordering of the neutrino mass states.