



Poster session 3 – Wednesday 6 July

P3.001 Improving the hierarchy sensitivity of ICAL using neural network

A Ajmi¹, A Dev², M Nizam¹, N Nayak² and U Sankar²

¹Homi Bhabha National Institute , India, ² Indian Institute of Technology Bombay , India

on behalf of the INO collaboration

Atmospheric neutrino experiments can determine the neutrino mass hierarchy for any value of δ_{CP} . The Iron Calorimeter (ICAL) detector at the India-based Neutrino Observatory (INO) can distinguish between the charged current interactions of $\nu\mu$ and $\bar{\nu}\mu$ by determining the charge of the produced muon. Hence it is particularly well suited to determine the hierarchy. The hierarchy signature is more prominent in neutrinos with energy of a few GeV and with pathlength of a few thousand kilometers, *i.e.* neutrinos whose direction is not close to horizontal. We use adaptive neural networks to identify such events with good efficiency and good purity. The hierarchy sensitivity, calculated from these selected events, is above 3σ level.