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**Muon Reconstruction in the Sudbury Neutrino Observatory**

CHRISTOPHER KYBA, University of Pennsylvania, SUDBURY NEUTRINO OBSERVATORY COLLABORATION — The Sudbury Neutrino Observatory is a water Cerenkov detector located 2km under a flat rock overburden. At SNO's depth cosmic muons range out at a zenith angle of approximately 65 degrees, making it possible for SNO to measure the unoscillated atmospheric neutrino flux by observing neutrino induced muons. The approximate spherical symmetry of the detector results in a characteristic event topology for through-going muon events that depends very strongly on the muon track length but not on the direction or entrance point of the muon. An impact parameter based maximum likelihood reconstruction algorithm which incorporates both the phototube charge and time information will be discussed in this talk. The information contained in the hit pattern makes it possible to reconstruct through-going muons at very large radii, which will allow SNO to use a fiducial area which is close to the total cross sectional area of the detector.

Eugene Beier

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