

Improving reconstruction of GeV-scale neutrinos in IceCube-DeepCore by direct event simulation

Detection of few-GeV atmospheric neutrinos is made possible by the DeepCore infill array to the IceCube detector. The relatively small amount of recorded event information at these energies introduces challenges for the reconstruction of particle properties, such as energy and incoming angle. Further, the naturally-occurring deep glacial Cherenkov medium requires detailed models, based on in-situ calibrations, to describe photon propagation in the ice. Current reconstruction methods rely on approximated tabulated template events. Replacing these templates with event simulation allows use of the full description of the natural ice medium for accurate resolution of event properties. This method of “direct reconstruction” can also be used for study of ice-related systematic errors. A full description of the algorithm, as well as an estimation of its effects on event reconstruction will be presented.

Authorship annotation

for the IceCube Collaboration

Session and Location

Wednesday Session, Poster Wall #179 (Ballroom)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)