



Contribution ID: 136

Type: Oral

Inelasticity reconstruction and neutrino-antineutrino separation for the IceCube Upgrade detector.

Tuesday 8 July 2025 14:24 (12 minutes)

Only left-handed particles and right-handed antiparticles participate in charged-current weak interactions. Because of spin effects, the energy fraction transferred to the target atom, called inelasticity, is on average larger for neutrino interactions than for antineutrinos. This allows a partial statistical separation between neutrinos and antineutrino events in a non-magnetized detector.

The future IceCube Upgrade will increase the instrumentation density in the bottom center of the current detector, which will improve the inelasticity reconstruction of muon (anti)neutrinos charged current interactions. This neutrino-antineutrino separation can be used for example to enhance the detector's sensitivity to the neutrino mass ordering.

Author: JACQUART, Marc (NBI)

Presenter: JACQUART, Marc (NBI)

Session Classification: Student Talks