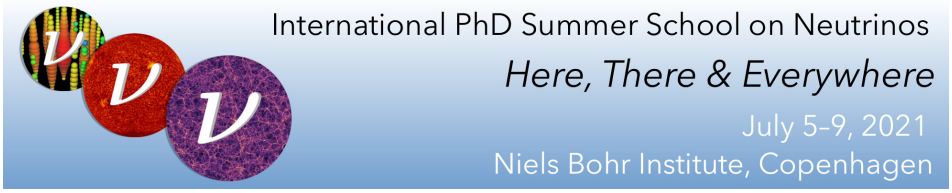

Contribution ID: **25** Type: **Oral**

Two-Dimensional Air Shower Development with MCEq

Wednesday, 7 July 2021 16:15 (15 minutes)

An accurate atmospheric neutrino flux is crucial for a multitude of physics studies with modern neutrino telescopes; as a signal for neutrino oscillation measurements, and as a background for searches of astrophysical neutrino sources. We seek to advance in the low-energy neutrino flux calculations (up to a few GeV) using the MCEq (Matrix Cascade Equations) code that numerically solves the one-dimensional cascade equations. For precision calculations at energies below a few GeV, which are well within reach of the IceCube Upgrade and KM3NeT-ORCA, the lateral component of hadronic cascades becomes important, requiring three-dimensional calculation schemes. We present a new study on the two-dimensional development of air showers within the MCEq framework as a necessary initial step towards a full 3D calculation, comparing our numerical solutions to those obtained with the Monte Carlo cascade codes.

Primary author: KOZYNETS, Tetiana (Niels Bohr Institute)

Co-author: Dr FEDYNITCH, Anatoli (ICRR)

Presenter: KOZYNETS, Tetiana (Niels Bohr Institute)

Session Classification: Student Talks