Contribution ID: **192** Type: **Oral**

Trinity: An experiment to detect cosmogenic neutrinos with the Earth skimming technique

Friday 11 August 2017 17:30 (15 minutes)

The predictions of the flux of cosmogenic neutrinos at 10^9 GeV are pretty solid and solely depend on the composition of the primary flux of cosmic-rays above 10^{10} GeV. Pushing the experimental sensitivity into the predicted flux levels is a challenge and the hunt to detect the first cosmogenic neutrino is ongoing. A major obstacle for experiments is to get a large enough acceptance while keeping costs reasonable. We have performed a conceptual design study of a dedicated array of Cherenkov telescopes that uses the Earth skimming technique to detect taus, which are produced when tau neutrinos convert in the Earth's crust and then emerge from the ground. Our study shows that one can build an experiment based on small Cherenkov telescopes, which reaches a sensitivity of $2 \cdot 10^{-9}$ GeV cm^{-2} s^{-1} sr^{-1} at 10^9\,GeV for a total cost envelope of $4M. The projected sensitivity is competitive with other proposed neutrino experiments in that energy range and outperforms them in terms of costs. In this talk we present details of our design study and discuss the proposed array of Cherenkov telescopes, which we named Trinity.

Author: NEPOMUK OTTE, A.

Presenter: NEPOMUK OTTE, A.

Session Classification: Neutrinos

Track Classification: Neutrinos (astrophysical, atmospheric)