



Contribution ID: 20

Type: Poster

## Probing Earth's internal structure with high energy neutrino transmission

The opacity of the Earth for the incidence of high energy neutrinos is directly related to the neutrino-nucleon cross sections and the description of the distribution of matter in the Earth's interior. In this work we investigate the sensitivity of neutrino transmission to the use of different models for Earth's density profile. In particular, we compare neutrino transmission using the PREM density model with three-, two- and one-layer models (core, mantle and crust) and constant densities. To calculate the neutrino-nucleon cross section we used the DGLAP predictions, with the CT14 parametrizations. Our results indicate that neutrino transmission is sensitive to different Earth profile density models at magnitudes that depend on the kinematic region tested and the models compared. We also show that the regeneration of the tau neutrino flux by its decay significantly impacts flux transmission in all models studied. The results achieved indicate that Earth profile density models impact the events observed at neutrino observatories such as IceCube.

**Primary authors:** FRANCENER, Reinaldo (UNICAMP); GONÇALVES, Victor (UFPEL)

**Presenter:** FRANCENER, Reinaldo (UNICAMP)

**Session Classification:** Impact of scattering uncertainties on measurements

**Track Classification:** Neutrino flux predictions and measurements