

Abstract Submitted  
for the APR07 Meeting of  
The American Physical Society

**Zenith Angle Dependence of Prompt Neutrino and Muon Fluxes in Cosmic Ray Interactions** MOHAMMED ZAKARIA, GINTARAS DUDA, Creighton University — Upon entering earth's atmosphere, high energy cosmic rays generate a shower of particles in which high energy muons and neutrinos are created. These high energy ( $> 10^{18}$  eV) particles can mimic signals coming from astrophysical sources currently hunted for by neutrino telescopes. In particular the prompt component of such shower is important as prompt muons and neutrinos dominate over conventional particles at higher energies. We simulate the flux of prompt muons and neutrinos using pQCD calculations with NLO corrections to charm production cross sections. Prompt muon and neutrino fluxes for UHECR with non-zero zenith angles will be presented. We will discuss the effect of the Earth's curvature, newly added tau neutrino fluxes, and several techniques for numerically optimizing the simulation.

Mohammed Zakaria  
Creighton University

Date submitted: 12 Jan 2007

Electronic form version 1.4