

Abstract Submitted  
for the APR08 Meeting of  
The American Physical Society

**Eikonal contributions to Ultra High Energy Neutrino-Nucleon Cross Sections in Low Scale Gravity Models** ENRICO MARIA SESSOLO, DOUGLAS MCKAY, University of Kansas — We calculate low scale gravity effects on the cross section for neutrino-nucleon scattering at center of mass energies up to the Greisen-Zatsepin-Kuzmin (GZK) scale, in the eikonal approximation. We compare the cases of an infinitely thin brane embedded in 5 compactified extra-dimensions, and of a brane with a physical tension  $M_S = 1$  TeV and  $M_S = 10$  TeV. The extra dimensional Planck scale is set at  $10^3$  GeV and  $2 \times 10^3$  GeV. We also compare our calculations with pre-existing neutral current standard model calculations in the same energy range. New physics effects enhance the cross section by two order of magnitude on average. Moreover, in the thin brane limit, the full eikonal approximation results in a cross section an order of magnitude higher than in the corresponding saddle point approximation.

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Date submitted: 10 Jan 2008

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