Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Relative scintillation efficiency of Xenon for low energy nuclear recoils. ANGEL MANZUR, ALESSANDRO CURIONI, LOUIS KASTENS, DANIEL MCKINSEY, Yale University, KAIXUAN NI, Columbia Univevrsity, TARITREE WONGJIRAD, Duke University — In the past few years, experiments using liquid xenon as a medium for detecting Cold Dark Matter have given competitive upper limits on the elastic WIMP-nucleon cross section. However, the dominant uncertainty in these limits is due to the uncertainty in the nuclear scintillation efficiency for xenon ($\mathcal{L}_{eff}$). The $\mathcal{L}_{eff}$ is defined as the amount of scintillation produced by nuclear recoils, divided by the amount of scintillation produced by electron recoils of the same energy. Previous experiments measuring the $\mathcal{L}_{eff}$ gave inconsistent extrapolations at recoil energies below 20 keV, an energy window crucial for dark matter searches. In this talk we report a new $\mathcal{L}_{eff}$ measurement for energies below 10 keV, done with monoenergetic neutron scattering of a liquid xenon detector.

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Date submitted: 09 Jan 2009 Electronic form version 1.4