

Abstract Submitted
for the APR05 Meeting of
The American Physical Society

Neutralino-Nucleon Scattering Rates with Realistic Form Factors from Electron Scattering Data ANN KEMPER, GINTARAS DUDA, Creighton University — Theoretical calculations of neutralino cross sections with various nuclei are of great interest to various direct detection dark matter searches such as CDMS, EDELWEISS, and others. However, these cross sections and direct detection rates are computed with standard nuclear form factors such as Woods-Saxon or exponential models, which may not fit the nucleus in question exactly. As well known, elastic electron scattering can allow for very precise determinations of nuclear form factors and hence nuclear charge densities for spin-zero, spherical nuclei. Using electron scattering data we extract form factors and charge densities for various spin-zero nuclei important in direct dark matter searches such as Si, Ge, and S. Using DarkSUSY, a publicly available dark matter code, we re-calculate neutralino-nucleon cross sections and detection rates using the form factors extracted from the data. We will show that the realistic form factors can alter the cross sections and rates significantly and will compare our calculations to those computed with standard form factors.

Ann Kemper
Creighton University

Date submitted: 20 Jan 2005

Electronic form version 1.4