Abstract Submitted
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Absolute ionization yield of 6.7 keV argon nuclear recoils in liquid argon PETER SORENSEN, LLNL — We have made a first measurement of the total electronic energy loss of low-energy argon atoms stopping in liquid argon. The importance of the measurement is underscored by the fact that state of the art theoretical treatment of this problem is only approximate. While these results are of modest interest to condensed matter theory, they are of keen interest to experiments seeking to directly detect signals due to nuclear recoils. Two particular interactions which would result in nuclear recoil signals are the scattering of hypothetical dark matter particles, or coherent elastic neutrino nucleus scattering. Using quasi mono-energetic neutrons from a collimated and filtered 7Li(p,n) source, we measured the absolute ionization yield of nuclear recoils in liquid argon at 6.7 keV at applied electric fields ranging from 200-2130 V/cm. We will discuss the experimental setup used for these measurements, our findings and their implications, and finally our recent efforts to apply this technique to liquid xenon.

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