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Nuclear Quenching in Gaseous Argon[1] KAREEM KAZKAZ, ADAM BERNSTEIN, LLNL, MICHAEL FOXE, Purdue University / LLNL, CHRISTIAN HAGMANN, LLNL, IGOR JOVANOVIC, Purdue University, WOLFGANG STOEFFL, LLNL, CELESTE WINANT, UCSF — In many media and with varying degrees of efficiency, nuclear recoils can induce ionization and/or scintillation. These nuclear recoil signatures can be used in dark matter searches and neutrino physics experiments, and to detect neutrons. To understand the behavior of the ionization process induced by nuclear recoils, nuclear quenching factors must be measured at various energies to properly reconstruct the recoil event. In this context, the quench factor is defined as the ratio of the number of electron-ion pairs produced by a nuclear recoil of a given energy to the number produced by an electron recoil of the same energy. Taking advantage of a unique 60 keV portable neutron source developed by LLNL, we will present latest results from our efforts to measure the nuclear quenching factor in gaseous argon at the lowest energy yet attempted. We also discuss using nuclear recoils in liquid argon to search for coherent neutrino scatters.

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