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NEST, the Noble Element Simulation Technique

Wednesday, 11 September 2013 19:30 (2h 30m)

A comprehensive model for explaining the light and charge yields, and pulse shapes, in liquid and gaseous noble elements will be presented which informs an exhaustive simulation code called NEST. All available xenon data on electron and nuclear recoils have been incorporated, and significant progress has been made on extending NEST's applicability to argon. The quasi-empirical NEST approach can lead to a better understanding of detector calibrations and performance verification and aid in the design and optimization of future direct dark matter detectors, and assist in the data analysis stage of present detectors, not just for WIMPs but also neutrinos (coherent scattering and double-beta decay). NEST predictions may have consequences for the current low-mass WIMP controversy, speaking to the exact value of the low-energy threshold of liquid xenon detectors.

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