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Pulse Shape in 2-Phase Xenon Detectors[1] JEREMY MOCK, University of California, Davis, NEST TEAM — Understanding the shape and size of the primary (S1) and secondary (S2) scintillation pulses in noble elements is crucial for discriminating between different particle interactions. Monte Carlo results from NEST (the Noble Element Simulation Technique) will be presented which match the available data from liquid xenon on the dependence of the recombination time, which is a critical piece of the S1 pulse timing structure, on dE/dx, interaction type, and electric field magnitude. In addition, a model for the S2 pulse shape and the dependence of its width on the depth of an interaction in a detector will be presented which takes into account drift speed, the single/triplet time constants, diffusion, thermal electron trapping at a liquid-gas interface, and other effects.

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