

Abstract Submitted  
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**Alpha Particle Scintillation Analysis in High Pressure Argon Using Photomultiplier Tubes** DANIEL SAENZ, REU Student — We may very likely discover dark matter by studying what it is not rather than what it is. By better understanding how ordinary matter interacts with other ordinary matter, dark matter interactions should stand out. That's why physicists such as my mentor, Dr. James White, are studying the affects of scintillation events due to ionizing high pressure noble gasses with gamma rays, alpha particles, neutrons, and electrons. My project has been using photomultiplier tubes and a high pressure pure argon gas chamber to study scintillation events. We have focused mainly on alpha particles (as well as gamma rays from decaying Cobalt-57 and neutrons from a 4-MeV proton accelerator). The resulting shape of the events, the ratios of secondary to primary scintillation, and the ratios of triplet state to singlet state decay energies helps catalog ordinary matter interactions.

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