

Xenon-Doped Argon for Dark Matter Search

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We will discuss the potential benefits of xenon doping in liquid argon for dark matter search experiments. Notably, doping liquid argon with xenon at the percent level is predicted to enhance the production and collection of electroluminescence light in a dual-phase argon detector, as well as improve its spatial resolution and temporal stability. At LLNL, we have constructed a test stand capable of doping liquid argon with over 5% xenon (by mole fraction) and have investigated the effects of xenon doping on the properties of electroluminescence signals. The potential of such a system for dark matter search will be presented.

Author: Dr XU, Jingke (Lawrence Livermore National Laboratory, USA)

Presenter: Dr XU, Jingke (Lawrence Livermore National Laboratory, USA)

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