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Juijen (Ryan) Wang (U of New Mexico): Triplet Lifetime Measurement in Gaseous Argon using MiniCLEAN Detector

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The MiniCLEAN (Cryogenic Low-Energy Astrophysics with Noble liquid) dark matter experiment will exploit a single-phase liquid argon detector instrumented with 92 photomultiplier tubes placed in the cryogen with 4-π coverage of a 500 kg (150 kg) target (fiducial) mass. The detector design strategy emphasizes scalability to target masses of order 10 tons or more. During the initial cooling phase, impurities within the cold gas ($\leq$140 K) were monitored by measuring the scintillation light triplet lifetime, and ultimately a triplet lifetime of 3.48 $\pm$ 0.01 μs was obtained, indicating ultra-pure argon. This is the longest argon triplet time constant ever reported. The latest status of MiniCLEAN detector will be also presented in the talk.

Presenter: Dr WANG, Juijen (Ryan) (University of New Mexico)

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