

HeRALD: Dark Matter Direct Detection with Superfluid 4He

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HeRALD, the Helium Roton Apparatus for Light Dark Matter, will use a superfluid 4He target to study the sub-GeV dark matter parameter space. The HeRALD design is sensitive to all signal channels produced by nuclear recoils in superfluid helium: singlet and triplet excimers, as well as phonon-like excitations of the superfluid medium. Excimers are detected via calorimetry in and around the superfluid helium. Phonon-like vibrational excitations eject helium atoms from the superfluid-vacuum surface which are detected by adsorption onto calorimetry above the surface. I will discuss the design, sensitivity projections, and ongoing R&D for the HeRALD experiment. In particular, I will present an initial light yield measurement of superfluid helium down to approximately 50 keV.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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