



Contribution ID: 27

Type: Poster

## Overview and Status of the SPLENDOR Experiment

*Tuesday, 7 November 2023 19:40 (20 minutes)*

The SPLENDOR (Search for Particles of Light Dark Matter with Narrow-gap Semiconductors) experiment is a search for light dark matter via the electron-recoil interaction channel, taking advantage of novel single-crystal narrow-bandgap (order 10-100 meV) semiconductors. Synthesized within the collaboration, the properties of these designer materials imply low dark counts when operated as ionization detectors at cryogenic temperatures. Using a readout scheme based on low-noise cryogenic high electron mobility transistors (HEMTs), the experiment is on track to achieve O(1) electron-hole pair resolution. This provides an excellent opportunity to probe new light dark matter parameter space: down to sub-MeV masses for fermionic dark matter and sub-eV masses for bosonic dark matter. This poster will review the multidisciplinary R&D behind SPLENDOR, discuss the current status of the experiment, and present projected sensitivities for planned dark matter searches operated both above- and below-ground.

This work was supported by the U.S. Department of Energy through the Los Alamos National Laboratory. Los Alamos National Laboratory is operated by Triad National Security, LLC, for the National Nuclear Security Administration of U.S. Department of Energy (Contract No. 89233218CNA000001). Research presented in this presentation was supported by the Laboratory Directed Research and Development program of Los Alamos National Laboratory under project number 20220135DR.

### Early Career

Yes

**Primary author:** WATKINS, Samuel (Los Alamos National Laboratory)

**Presenter:** WATKINS, Samuel (Los Alamos National Laboratory)

**Session Classification:** Poster Session

**Track Classification:** RDC Parallel Sessions: RDC7: Low-Background Detectors