

## From Electrons to Phonons: Experimental Frontiers of Low-mass Dark Matter Searches

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The nature of dark matter remains one of the mysteries in modern physics. While traditional searches have focused on the weak-scale mass range, a growing body of theoretical and experimental work is now exploring the possibility of low-mass dark matter, with mass spanning from MeV down to sub-eV scales. This shift in focus has sparked a wave of technological innovation aimed at detecting feeble interactions between light dark matter and ordinary matter. In this review, I will present the current landscape of experimental technologies designed to probe light dark matter across various detection channels, with focus on electron-recoil detectors using semiconductors and superconductors and cryogenic calorimeters with eV-scale thresholds. The principles behind these technologies and the challenges they face in terms of background mitigation and scalability will be discussed.

### Collaboration you are representing

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