

Maximising sensitivity to low mass dark matter with the Migdal effect and exploring non-standard models including isospin violation in liquid noble direct detection experiments

Thursday, September 22, 2022 4:10 PM (20 minutes)

Liquid noble direct dark matter detection experiments aim to detect galactic dark matter scattering off nuclei in highly sensitive detectors in underground laboratories. As positive signals of dark matter in the lab are elusive, it is crucial that current and future experiments broaden the reach and scope of dark matter models which are explored. In this presentation I will report on work exploring sensitivity to low mass dark matter exploiting the Migdal effect: this will include presentation of recently-released DarkSide-50 results, reinterpretation of existing Xenon-1T data, and future sensitivity projections for next generation argon and xenon detectors. I will also present new studies of the sensitivity of existing and future argon- and xenon-based detectors to isospin violating dark matter, demonstrate the complementarity of different target materials in the search for dark matter, and the importance of nuclear form factor models for properly characterising any discovery.

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