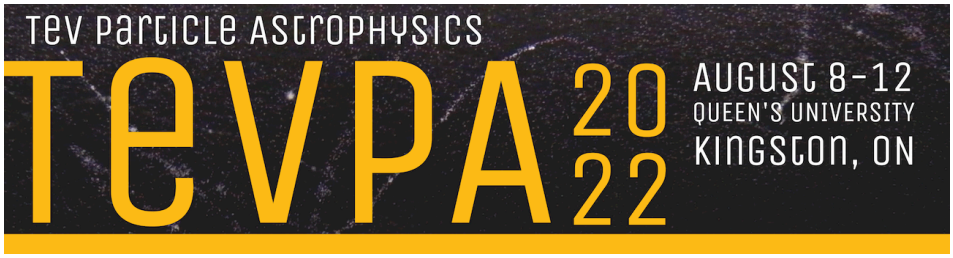

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Discovering Composite Dark Matter with the Migdal Effect

Monday, 8 August 2022 14:20 (20 minutes)

An intriguing possibility for dark matter is that it formed bound states in the early Universe, in a scenario called 'composite' dark matter, much like the Standard Model fundamental particles formed nucleons, nuclei and atoms. One of the simplest composite dark matter models consists of dark fermions bound together by a real scalar field. Composite states that are massive enough source scalar fields so intense that nuclei, if coupled to this force, can recoil upon contact to energies capable of ionization through the Migdal effect. Combined with the large sizes of these composites, the ionization signal produced by their transit at dark matter experiments is detectable even for minuscule couplings between nuclei and the dark matter. In this talk, I will discuss the discovery prospects of composite states at noble element detectors like Xenon-1T and other underground experiments.

Collaboration name

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