Contribution ID: **120** Type: **Parallel talk**

Prospects for non-standard low mass dark matter candidate searches with DarkSide-20k

Wednesday 9 April 2025 11:30 (15 minutes)

DarkSide-20k, a 51 t dual-phase Liquid Argon Time Projection Chamber (LAr TPC), is designed to detect dark matter particles, which potentially comprise up to 85% of the universe's matter. Traditionally direct detection experiments focus on velocity and moment-independent interactions (either spin-independent or spin-dependent), which have not yielded positive results, leading to significant parameter space exclusions. This talk emphasises the importance of exploring beyond these standard interactions, considering isospin-violating, and momentum and velocity-dependent interactions. We will discuss the use of model-independent, non-relativistic effective field theory operators to describe dark matter-argon nucleus interactions and the potential of DarkSide-20k to test spin-dependent interactions with world-leading sensitivity.

Author: ROBERTS, Conner

Presenter: ROBERTS, Conner

Session Classification: Terrestrial Dark Matter Searches

Track Classification: Terrestrial Dark Matter Searches