

Probing WIMP–Nucleon Effective Interactions with Paleo-Detectors

Thursday, April 16, 2026 10:45 AM (30 minutes)

Within the framework of a non-relativistic effective field theory (NREFT), WIMP–nucleon interactions are described by a complete basis of operators that capture momentum and spin dependencies beyond the standard spin-independent and spin-dependent cases. We present projections of the sensitivity of paleo-detectors to the full set of elastic and inelastic NREFT operators and compare their performance to that of conventional direct-detection experiments. We further investigate the capability of paleo-detectors to discriminate between different operator structures and explore prospects for dark matter mass reconstruction. These studies highlight the complementarity of paleo-detectors in probing non-standard WIMP interactions and characterizing potential dark matter signals.

Do you plan to give the talk in person?

Yes

Author: THEODOSOPOULOS, Dionysios (The University of Texas at Austin)

Co-authors: KELSO, Chris; Prof. FREESE, Katherine (The University of Texas at Austin); STENGEL, Patrick (Jožef Stefan Institute)

Presenter: THEODOSOPOULOS, Dionysios (The University of Texas at Austin)