

Opportunities for Axion Searches at Beam Dumps and Stopped-Pion Facilities

Wednesday 16 November 2022 16:20 (15 minutes)

Pseudo-Nambu-Goldstone Bosons (pNGBs) are a byproduct of many theories that address long-standing puzzles of the Standard Model (SM). Axions and axion-like particles (ALPs) which have spawned from solutions to the strong-CP problem can also make good dark matter candidates and arise ubiquitously in string theory, and in other theories with spontaneously broken symmetries. ALPs in the MeV mass range are of particular interest, as it still remains a blind spot in the parameter space between bounds from astrophysical constraints and existing beam dump probes. This presents an exciting opportunity to test MeV-scale ALPs with couplings to electrons and photons at stopped-pion sources where electromagnetic cascades in the beam targets permit many production modes for ALPs. I will illustrate a few search strategies that stopped-pion facilities like CCM have already begun to implement to probe this region of parameter space, and connect this with MiniBooNE's sensitivity and the implications for a future search at DUNE.

Author: THOMPSON, Adrian

Presenter: THOMPSON, Adrian

Session Classification: Session III