



PHYSICS AND ASTRONOMY COLLOQUIUM

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“All the dark we can not see - the state-of-the art in direct searches for particle dark matter”

Abstract

“One of the major challenges of modern physics is to decipher the nature of dark matter. Astrophysical observations provide ample evidence for the existence of an invisible and dominant mass component in the observable universe. The dark matter could be made of new, yet undiscovered elementary particles, with allowed masses and interaction strengths with normal matter spanning an enormous range. Among these, particles with masses in the MeV-TeV range could be directly observed via elastic or inelastic scatters with atomic nuclei or with electrons in ultra-low background detectors operated deep underground. After an introduction to the dark matter problem and the phenomenology of direct dark matter detection, I will discuss the most promising direct detection techniques, addressing their current and future science reach, as well as their complementarity. The focus will be on the recent results of the XENON1T experiment, on its successor XENONnT, which is under commissioning at the Gran Sasso Underground Laboratory in Italy and on DARWIN, an R&D and design study for a next-generation, multi-ton dark matter detector.”

Wednesday, January 20, 2021

10:30 a.m. – LIVE session with Q & A (will be recorded)

3:30 p.m. – Playback of recorded session

Zoom link: