

DARWIN: Towards the Ultimate Dark Matter Detector

Friday, September 16, 2016 3:30 PM (20 minutes)

In this talk I will present the concept of the DARWIN detector, discuss its physics reach in various channels, the main sources of backgrounds, as well as the ongoing detector design and R&D efforts.

Summary

DARK matter WImp search with liquid xenON (DARWIN) will be a multi-ton, dual-phase time-projection chamber with a low-energy threshold and ultra-low background level for direct dark matter detection and neutrino physics.

Its primary goal is to explore the entire experimentally accessible parameter space for Weakly Interacting Massive Particles (WIMPs) in a wide mass-range from 5 GeV to 100 TeV.

In addition, it will be sensitive to other rare events, and will allow searches for solar axions and galactic axion-like particles, for the neutrinoless double-beta decay of Xe-136, and for coherent neutrino-nucleus interactions. It will be able to measure the low-energy solar neutrino flux through elastic scattering off electrons with <1% precision, thus constraining solar models.

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