

Abstract

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An Overview of Neutrino Directional Detection

Neutrinos have long been considered a powerful tool for exploring physics beyond the standard model and have been recognized as having applications in nuclear reactor monitoring and non-proliferation efforts. In particular, there is interest on the part of both the physics and nuclear security communities in a discrete neutrino detector; however, the experimental difficulties associated with detecting neutrinos in a high background environment have hampered past efforts, forcing experiments underground. Recent advances in detector technology from related fields may now enable the construction of a neutrino detector with event by event directional capabilities. I discuss my research on novel detector designs with the goal of directionally reconstructing neutrino interactions.