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NuDot and Machine Learning

(Submitted as a poster request)

NuDot is a monolithic ton-scale liquid scintillator research and development testbed. Presently, NuDot aims to reduce one of the dominant backgrounds in modern and future neutrinoless double beta decay ($0\nu\beta\beta$) searches: the solar neutrino background. It will demonstrate the ability to separate the Cherenkov emission by MeV electrons from the scintillation radiation, through fast timing resolution and high speed electronics. The separation of Cherenkov radiation can be further used to distinguish the single electron emission by solar neutrinos from the back-to-back emission in $0\nu\beta\beta$. This separation is done using low time transit spread photomultiplier tubes. This poster will explain the NuDot project and how new methods in machine learning can be used to improve signal extraction.

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