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Search for Burst and Relic Supernova Neutrinos in DUSEL: Research on Gd loaded water Cerenkov detector

The observation of neutrinos emerging from a core collapse supernova will enhance our understanding of star formation, and possibly quark matter and black hole formation. To detect relic supernovae neutrinos, the Long Baseline Neutrino Experiment (LBNE) proposed a Gadolinium-doped 300 kton water Cerenkov detector that will be placed at the depth of 1480 m at the Deep Underground Science and Engineering Laboratory (DUSEL) in South Dakota, USA. This poster gives an overview of the detection mechanism of supernovae neutrino and the possibility for LBNE to detect relic neutrinos from a core collapse at the center of the Milky Way galaxy, 8.5 kpc away.

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