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Electric Field Simulation of the Field Cage for Dual Phase Deep Underground Neutrino Experiment ARCHIT JAISWAL, University of Texas at Arlington — The Deep Underground Neutrino Experiment (DUNE) is the U.S. flagship experiment being designed to study the characteristics of neutrinos which make up a quarter of the fundamental particle map in 2026. This subatomic particle can reveal various unsolved mysteries like the existence of matter in the universe. In DUNE neutrino interactions will be captured inside a 12m x 12m x 60m active volume time projection chamber using liquid argon as the medium. The ionization electrons due to the traversing charged particles from neutrino interactions drift through the liquid argon and detected. The field cage which is constructed by modules made of aluminum strips and fiber-glass I-beams provides a uniform electric field for these electrons to drift at the uniform speed. After analyzing the performance of the previous design of field cage used in a prototype detector, several improvements were made to the field cage design for DUNE. Before the actual construction and test of field cage, we are simulating the electric field across the new field cage design. In this talk, I would be describing the new design of the field cage and the resulting electric field map of the new field cage design.

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