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Sterile Neutrino Search at MicroBooNE using both the BNB and NuMI Beams

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The MicroBooNE experiment employs an 85-ton active volume liquid argon time projection chamber to detect neutrinos from both the on-axis Booster Neutrino Beam (BNB) and off-axis Neutrinos at the Main Injector (NuMI) beam. This work investigates short baseline neutrino oscillations in a 3+1 sterile neutrino model and compares our results to previous anomalies found in experiments such as LSND, Neutrino-4, and gallium anomalies. To achieve our goal, we utilize high-performance charged current electron neutrino and muon neutrino selections. In this presentation, we will detail our initial results on this sterile neutrino search from MicroBooNE using the BNB beam. Additionally, we will examine the impact of a degeneracy resulting from the cancellation of ν_e appearance and disappearance, and demonstrate that combining data from the BNB and NuMI beams, which have substantially different ν_e/ν_μ ratios, can break this degeneracy.

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