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Optimizing the two detector method on NOvA 3-flavor oscillation analysis NITISH NAYAK, University of California, Irvine, NOVA COLLABORATION — NOvA is a long-baseline neutrino oscillation experiment that is designed to probe the neutrino mass hierarchy and mixing structure. It uses two functionally identical liquid scintillator detectors 14.6mrad off-axis from the NuMI beamline at Fermilab, allowing a tightly focused neutrino flux peaked at around 2 GeV. The Near Detector is located 100m underground and is used to characterize the neutrino and anti-neutrino beams before oscillations. The Far Detector is placed at a distance of 810 km from the beam source and is used to look for neutrino oscillations, primarily in the $\nu_\mu \to \nu_\mu$ and the $\nu_\mu \to \nu_e$ channels and their anti-neutrino counterparts. The Far Detector lies on surface and as a result collects cosmic backgrounds at a rate of ~ 10 kHz. In this talk, I will describe techniques used in the oscillation analysis to minimize the statistical and systematic errors in the measurement of the oscillation parameters. These take the form of improved methods to both selecting the signal in the two channels as well as constraining the Far Detector neutrino data using the Near Detector.

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