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Matter effect in neutrino oscillations for NOvA experiment

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NOvA is an accelerator experiment at FNAL (USA) devoted for studying neutrino oscillations (electron neutrino appearance and muon neutrino disappearance in both neutrino and antineutrino modes). This is one of off-axis new generation experiments with two detectors sited at 14 mrad off the NuMI beam axis and separated by 810 km of the Earth crust. The nu_e appearance analysis aims to determine the neutrino oscillation mass spectrum and measure the CP violating phase. First results of the NOvA experiment based on 1 year statistics in neutrino mode were presented in 2015. In this talk we focus on matter effect in oscillation phenomenon — observing an enhancement in nu-mu to nu-e oscillations by passing nu-mu beam through the earth crust (in comparison with a vacuum case).

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