Application for the Intensity Frontier Fellowship

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Horn and target system simulation and optimization for NOvA and LBNF

Abstract

The NOvA and LBNF programs will pursue the most pressing questions in neutrino oscillations: the neutrino mass hierarchy and CP violation. This implies operation at ever high beam intensities with NOvA hoping to increase its delivered power from 700 kW to 900 kW and LBNF anticipating powers as high a 1.2 MW and beyond. These upgrades require further evaluation and optimization of the target systems to maximize the neutrino flux to the detectors and overcome engineering challenges. The Intensity Frontier Fellowship support will allow the proponent to continue contributing to the project at the 50% level beyond the 2017 sabbatical leave.