Abstract Submitted
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Plasma Lens for Muon and Neutrino Beams[1] STEPHEN KAHN, SERGEY KORENEV, Muons Inc, MARY BISHAI, MILIND DIWAN, JUAN GALLARDO, ADY HERSHCOVITCH, BRANT JOHNSON, Brookhaven National Laboratory — The plasma lens is examined as an alternate to focusing horns and solenoids for use in a neutrino or muon beam facility. The plasma lens concept is based on a combined high-current lens/target configuration. The current is fed at electrodes located upstream and downstream from the target where pion capturing is needed. The current flows primarily in the plasma, which has a lower resistivity than the target. A second plasma lens section, with an additional current feed, follows the target to provide shaping of the plasma stability. The geometry of the plasma is shaped to provide optimal pion capture. Simulations of this plasma lens system have shown a 25% higher neutrino production than the horn system. A plasma lens has additional advantage: larger axial current than horns, minimal neutrino contamination during antineutrino running, and negligible pion absorption or scattering. Results from particle simulations using a plasma lens will be presented.

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