

Abstract Submitted  
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**Modeling of a plasma vacuum window for high power beam applications**<sup>1</sup> PETER STOLTZ, KRISTIAN BECKWITH, MADHUSUDHAN KUNDRAPU, Tech-X Corp., FELIX MARTI, Facility for Rare Ion Beams, Michigan State University — A major new facility for the Department of Energy (DOE) Office of Nuclear Physics is the Facility for Rare Isotope Beams (FRIB). FRIB will accelerate heavy ion beams (up to uranium) to energies as high as 200 MeV/u and with powers as high as 400 kW in a few mm diameter. Due to the limited lifetime at these high powers of solid foil strippers, FRIB researchers are pursuing gas jet strippers as a new approach. By exciting an arc discharge across the gas jet, the resulting plasma can act as a vacuum window. We are developing models of these plasma windows, including the complex geometry of the nozzle, including viscosity effects, and including a temperature dependent air conductivity. We present here results for the flow velocity as a function of the pressure drop, and for the temperature as a function of discharge current. We compare these results with recent experiments performed at FRIB.

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