

Abstract Submitted
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Neutral profiles in centrifugal confined plasma SHEUNG-WAH NG,
A. B. HASSAM, IREAP, University of Maryland, College Park — A simple model is developed for the penetration of neutrals into plasma for a rotating mirror configuration, for example, the Maryland Centrifugal Experiment (MCX). In this model, an inward confining force originating from the centrifugal force due to the rotation competes with the outgoing tendency of the plasma in the parallel direction. An exponential relation between the centrifugal confining force and the neutral density at the axis wall is demonstrated, with ionization and charge-exchange interaction being considered. A 2D code has been developed with “recombination” layers simulating the physics close to the walls. In the crossfield direction, classical diffusion losses are allowed; the code however shows the signature of a scrape-off layer (SOL) in 2-dimensional simulation. How neutral dynamics is affected by supersonic rotation is of fundamental interest for the mirror configuration of centrifugally confined plasmas.

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