

analysis and modeling of lithium flows in porous materials

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Liquid lithium (LL) walls have been identified as a potential solution to many of the engineering problems in a magnetic fusion reactor. The flowing liquid metal could provide heat removal, elimination of erosion via constant renewal of the wall, and possible stabilization of MHD modes. The NSTX-U experiments at the Princeton Plasma Physics Laboratory are planned for testing a pre-filled LL divertor system with capillary wicking channels for supply of lithium from an internal reservoir [ref.]. However, the erosion of the LL surface can be induced by plasma flow or Lorentz forces that may lead to its instability and undesirable effects such as waving, dewetting, and lithium droplet formation.

I. INTRODUCTION

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