

Abstract Submitted  
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**Simulations of Beam Ion Losses Due to Tearing Modes in DIII-D**<sup>1</sup> E.M. CAROLPIO, W.W. HEIDBRINK, University of California, Irvine, C.B. FOREST, University of Wisconsin-Madison, R.B. WHITE, Princeton Plasma Physics Laboratory — Neutral beam current drive (NBCD) is an important non-inductive source of current in tokamaks. It can be used to shape the current profile to optimize performance or drive current in a low aspect ratio device without a dedicated solenoid. However, in the presence of large tearing modes, the NBCD is significantly reduced as beam ions are observed to be lost before they thermalize.<sup>2</sup> To study this effect, the Hamiltonian guiding center code ORBIT is used to simulate deuterium beam ion transport in the presence of large, static islands. Fits to experimental data are used to calculate the initial particle distribution, collision frequency profiles, and equilibrium. Preliminary analysis shows that large tearing modes do cause beam ion losses but not at sufficient levels to explain the observed  $\sim 50\%$  reduction in current drive and neutron emission.

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<sup>2</sup>C.B. Forest *et al.*, Phys. Rev. Lett. **79**, 427 (1997).

Prefer Oral Session  
 Prefer Poster Session

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Special instructions: DIII-D Poster Session I (transport, turbulence, & stability), immediately following Harvey

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