

**Abstract Submitted for the 54th Annual Meeting  
Division of Plasma Physics  
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Category Number and Subject: 10.0.0 Undergraduate or High School Research

Theory       Experiment

**Effect of Neutral Beam Parameters on Prompt Losses in Tokamaks,\*** J. Jurewicz, *MIT*; D.C. Pace, R.K. Fisher, M.A. Van Zeeland, *GA*; C.T. Holcomb, *LLNL* – First orbit, or prompt losses occur when an injected neutral atom ionizes such that its first poloidal transit intersects a limiter surface. The heat load from these losses can affect diagnostic components near the first wall. We are developing a code that calculates where prompt losses reach the wall of the DIII-D tokamak as a function of plasma parameters including 3D beam geometry. This code also serves as a synthetic diagnostic for the Fast Ion Loss Detector system. Using magnetic equilibria and beam energies from DIII-D discharges, the pitch angle and density of neutral particles ionized along the beam path are determined and used to calculate ion trajectories, resulting in a map of prompt loss flux to the wall. A modeling study is performed to determine prompt loss versus beam energy. Initial results focus on whether it is possible to shift an existing prompt loss heat load away from a motional Stark effect diagnostic by increasing the energy of the source beam.

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