

Abstract Submitted  
for the DPP17 Meeting of  
The American Physical Society

**Energetic Particle Loss Estimates in W7-X**<sup>1</sup> SAMUEL LAZERSON, Princeton Plasma Physics Laboratory, SIMPPA AKASLOMPOLO, MICHEAL DREVLAK, ROBERT WOLF, Max-Planck-Institut für Plasmaphysik, DOUGLASS DARROW, DAVID GATES, Princeton Plasma Physics Laboratory, W7-X TEAM — The collisionless loss of high energy H<sup>+</sup> and D<sup>+</sup> ions in the W7-X device are examined using the BEAMS3D code <sup>2</sup>. Simulations of collisionless losses are performed for a large ensemble of particles distributed over various flux surfaces. A clear loss cone of particles is present in the distribution for all particles. These simulations are compared against slowing down simulations in which electron impact, ion impact, and pitch angle scattering are considered. Full device simulations allow tracing of particle trajectories to the first wall components. These simulations provide estimates for placement of a novel set of energetic particle detectors <sup>3</sup>. Recent performance upgrades to the code are allowing simulations with  $\approx$  1000 processors providing high fidelity simulations. Speedup and future works are discussed.

<sup>1</sup>DE-AC02-09CH11466

<sup>2</sup>Matthew McMillan and Samuel A Lazerson 2014 Plasma Phys. Control. Fusion **56** 095019

<sup>3</sup>G. Szalkowski, Douglas Darrow and F. Cecil 2013 PPPL-4956

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Date submitted: 18 Jul 2017

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