

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Secondary-electron emission effects in a 1D ELM model studied with Gkeyll¹ T. STOLTZFUS-DUECK, A. HAKIM, E.L. SHI, G.W. HAMMETT, PPPL — The 1D ELM heat pulse problem of Havlíčková et al (PPCF 54: 045002) is generalized to include secondary electron emission (SEE), an important factor since the secondary electron emission coefficient δ varies widely for different wall materials, ranging from $\delta < \sim 0.5$ for lithium to $\delta > 1$ for standard high- Z metals at large T_e . For moderate collisionality regimes, analysis and gyrokinetic simulation with the Gkeyll code show an enhancement of the electron heat flux by $\sim (1 - \delta)^{-1}$, a large enhancement for δ approaching unity. In very collisionless regimes, this enhancement is reduced as secondary electrons escape the plasma before isotropizing in pitch angle.

¹Supported by the Max-Planck/Princeton Center for Plasma Physics, the SciDAC Center for the Study of Plasma Microturbulence, and DOE Contract DE-AC02-09CH11466.

Timothy Stoltzfus-Dueck
Princeton Univ

Date submitted: 24 Jul 2015

Electronic form version 1.4