Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Collisional heating of a plasma column slowly forced across a squeeze potential[1] D.H.E. DUBIN, University of California San Diego — When equilibrium plasmas have two or more locally-trapped particle populations, perturbations to the equilibrium can produce phase-space discontinuities in the distribution function that strongly enhance transport, plasma loss, and wave damping. This poster presents a simple version of this process, wherein a plasma is heated as it is slowly forced back and forth across a squeeze potential (at a frequency ω that is small compared to the particle bounce frequency) that traps particles on either side of the squeeze. Adiabatic theory is developed for the distribution function, showing that trapped and passing particles have different responses to the forcing that produces a collisional boundary layer at the separatrix. Expressions for both the adiabatic and non-adiabatic distribution functions are presented, and the heating rate caused by the collisional boundary layer at the separatrix is derived. The heating is proportional to $\sqrt{(\nu\ \omega)}$, where ν is the collision rate.

[1]Supported by NSF Grant PHY-1414570, and DOE Grants DE-SC0002451 and DE-SC0008693.

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Date submitted: 13 Jul 2016 Electronic form version 1.4