

Abstract Submitted  
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**Improved Cooling Methods for Magnetized Electron Plasmas<sup>1</sup>**

ERIC HUNTER, Univ of California - Berkeley, NATHAN EVETTS, Univ of British Columbia, JOEL FAJANS, Univ of California - Berkeley — Cavity and lumped-element resonators have been designed for coupling electron plasmas to a 4 K thermal bath via their cyclotron modes and Trivelpiece-Gould modes. Plasmas cooled this way can reach lower temperatures and can be manipulated at lower magnetic fields than those cooled via free-space cyclotron radiation. We are exploring gradient enhanced cyclotron-cavity resonance, resistive cooling, and phase-space tailoring schemes with the goal of optimizing cooling of  $N > 10^5$  electrons from  $\sim 1$  eV to  $\sim 10$  K temperatures in a few seconds.

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Eric Hunter  
Univ of California - Berkeley

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