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**Electron Plasmas Cooled by Cyclotron-Cavity Resonance**[1]
LENNY EVANS, Univ of California - Berkeley, N. DETAL, Beloit College, NATHAN EVETTS, Univ of British Columbia, JOEL FAJANS, Univ of California - Berkeley, WALTER HARDY, Univ of British Columbia, ERIC HUNTER, Univ of California - Berkeley, ISAAC MARTENS, Univ of British Columbia, FRANCIS ROBICHEAUX, Purdue University, SABRINA SHANMAN, Univ of California - Berkeley, CHUKMAN SO, Univ of Calgary, X. WANG, Purdue University, JONATHAN WURTELE, Univ of California - Berkeley — We observe that high-Q electromagnetic cavity resonances increase the cyclotron cooling rate of pure electron plasmas held in a Penning-Malmberg trap when the electron cyclotron frequency, controlled by a tunable magnetic field, matches the frequency of a standing wave mode in the cavity. The cooling rate and equilibrium plasma temperatures depend on the spatial distribution of electrons in the cavity and the magnetic field. These dependencies have been modeled analytically, and good agreement is found between theoretical and experimental spatial-magnetic profiles.

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