

Abstract Submitted
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Temperature Oscillations in Ultracold Plasmas MICHAEL S. MURILLO, Los Alamos National Laboratory — Although most plasmas exist at temperatures above that needed for ionization, it is now possible to create neutral plasmas with temperatures in the microKelvin range by rapid photoionization of a very cold gas. Because of their very low temperatures, such plasmas have Coulomb coupling parameters (ratio of potential to kinetic energy) as high as $\Gamma \sim 300,000$. Predictions of ultracold plasma behavior [Murillo, PRL **76**, 115003 (2001)] show that rapid heating occurs as the plasma correlates to form an equilibrium moderately coupled plasma. This prediction has recently been experimentally verified [Chen *et al.*, PRL **93**, 265003 (2004)] and, in addition, strong oscillations in the temperature were observed. I will discuss the basics of ultracold plasmas, the rapid heating mechanism, and give some insight into the temperature oscillations.

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