

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Study of Ultracold Strontium Plasma** SAMPAD LAHA, PRIYA GUPTA, CLAYTON SIMIEN, SARAH NAGEL, NATALI MARTINEZ, PASCAL MICKELSON, THOMAS KILLIAN, Rice University — Ultracold plasma opens up a new regime in the study of plasma physics. The interest in ultracold plasma stems from the fact that the fundamental processes of thermalization, correlation, reionization and recombination in a plasma are very different at the millikelvin temperatures. We laser cool and trap neutral Strontium atoms and then photoionize them to make ultracold plasma. The electron temperature is determined by the photoionizing laser while the ions are at the same temperature as the laser-cooled atoms. At this ultracold temperature, the ions are in the strong coupling regime. Using absorption imaging with 422nm light, we are able to study the various processes in ultracold plasma with excellent spatial, temporal and spectral resolution. This poster will include a description of the apparatus and technique used to create, study and trap ultracold plasma. We will also present results from recent experiments showing plasma oscillations and expansion.

Sampad Laha  
Rice University

Date submitted: 01 Feb 2006

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