

Abstract Submitted
for the 4CF12 Meeting of
The American Physical Society

Ultracold Neutral Plasmas at Room Temperature¹ JOSHUA WILSON, STEPHEN RUPPER, SCOTT BERGESON, NATHAN HEILMANN, Brigham Young University — Under certain conditions, the characteristics of ultracold neutral plasmas can be reproduced at room temperature. At high enough density the disorder-induced heating temperature is much greater than room temperature, meaning that the equilibrium ion temperature is determined by the ion density. We produce these plasmas using strong-field ionization of neon atoms in a jet. We have developed an interferometric method for determining the average plasma density as a function of time and observe the plasma expanding on time scales as short as 5 ns. We show that the ultracold neutral plasma expansion model can be used to extract the electron temperature with good reliability.

¹This project is funded by NSF Grant Number PHY-0969856.

Joshua Wilson
Brigham Young University

Date submitted: 20 Sep 2012

Electronic form version 1.4