

Abstract Submitted  
for the DPP14 Meeting of  
The American Physical Society

**A new class of strongly coupled plasmas inspired by sonoluminescence**<sup>1</sup> ALEXANDER BATALLER, GUILLAUME PLATEAU, BRIAN KAPPUS, SETH PUTTERMAN, Univ of California - Los Angeles — Sonoluminescence originates in a strongly coupled plasma with a near liquid density and a temperature of  $\sim 10,000$  K. This plasma is in LTE and therefore, it should be a general thermodynamic state. To test the universality of sonoluminescence, similar plasma conditions were generated using femtosecond laser breakdown in high pressure gases. Calibrated streak spectroscopy reveals both transport and thermodynamic properties of a strongly coupled plasma. A blackbody spectrum, which persists long after the exciting laser has turned off, indicates the presence of a highly ionized LTE microplasma. In parallel with sonoluminescence, this thermodynamic state is achieved via a considerable reduction in the ionization potential.

<sup>1</sup>We gratefully acknowledge support from DARPA MTO for research on microplasmas. We thank Brian Naranjo, Keith Weninger, Carlos Camara, Gary Williams, and John Koulakis for valuable discussions.

Alexander Bataller  
Univ of California - Los Angeles

Date submitted: 11 Jul 2014

Electronic form version 1.4