

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Target tracking in a dusty plasma: phase transitions and equations of state**<sup>1</sup> NEIL OXTOBY, JASON RALPH, CÉLINE DURNIK, DMITRY SAMSONOV, University of Liverpool, United Kingdom — A dusty plasma is a low-density ionized gas containing micron-sized charged dust particles. Laboratory dusty plasmas can be used as kinematic simulators of condensed matter systems, displaying phenomena such as phase transitions. The motion of individual particles is resolvable using a high-speed video camera. We use recursive state estimation (target tracking) techniques to track the dust kinematics, from which we calculate an equation of state for the toy condensed matter system.

<sup>1</sup>Financial support from UK EPSRC grant number EP/G007918/1

Neil Oxtoby  
University of Liverpool, United Kingdom

Date submitted: 07 Nov 2011

Electronic form version 1.4