

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Thermodynamics and Quantum Correlations in Trapped Ion Crystals THANED PRUTTIVARASIN, MICHAEL RAMM, University of California, Berkeley, MANUEL GESSNER, University of California, Berkeley/ University of Freiburg, HARTMUT HAEFFNER, University of California, Berkeley, HAEFFNER GROUP TEAM — Crystals of trapped ions exhibit a broad variety of physical phenomena ranging from fundamental quantum effects with applications for quantum information theory to mesoscopic physics at the border to the classical regime. In our current experiments we are investigating the melting dynamics of larger ion crystals and the distribution and transport of energy in such systems. In another experiment in the quantum regime, we are aiming at detecting the signatures of nonclassical system-environment correlations in the dynamics of an open quantum system. We present a theoretical scheme which does not require control over the environment and that can be carried out by local operations on the open system only.

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Date submitted: 28 Jan 2013

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