Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Trilinear hamiltonian with trapped ions and its applications SHIQIAN DING, GLEB MASLENNIKOV, ROLAND HABLUTZEL, DZMITRY MATSUKEVICH, Centre for Quantum Technologies, National University of Singapore — The model of three harmonic oscillators coupled by the trilinear Hamiltonian of the form $a^\dagger bc + ab^\dagger c^\dagger$ can describe wide range of physical processes. We experimentally realize such interaction between three modes of motion in the system of 3 trapped Yb ions. We discuss several application of this coupling, including implementation of the quantum absorption refrigerator, simulation of the interaction between light and atoms described by a Tavis-Cummings model, simulation of the non-degenerate parametric down conversion process in the fully quantum regime and studies of a simple model of Hawking radiation.

Dzmitry Matsukevich
Natl Univ of Singapore

Date submitted: 29 Jan 2016 Electronic form version 1.4