

Abstract Submitted  
for the DAMOP08 Meeting of  
The American Physical Society

**Light-Atoms-Mirror Entanglement in an Optical Cavity** CLAUDIU GENES, DAVID VITALI, PAOLO TOMBESI, University of Camerino — We propose a scheme for the realization of a hybrid, strongly quantum-correlated system formed of an atomic ensemble surrounded by a high-finesse optical cavity with a vibrating mirror. We show that the steady state of the system shows tripartite and bipartite continuous variable entanglement in experimentally accessible parameter regimes, which is robust against temperature. This work builds on previous theoretical results that have proven the possibility of ground state cooling of mechanical oscillators and generation of intra-cavity optomechanical entanglement between light and a vibrational degree of freedom of a micromirror.

Claudio Genes  
University of Camerino

Date submitted: 04 Apr 2008

Electronic form version 1.4