Abstract:

Quantum optics in cold and high-density atomic gases is a little explored and promising area of study. Among the fascinating possibilities are (a) formation of a quantum hologram, (b) development of random lasing, or a photonic bomb, (c) Anderson localization of light, and (d) creation of superradiant and subradiant collective states of an atomic ensemble. Particularly intriguing physics may occur when the spatial dimensionality of the systems is reduced such that light propagation is limited to a quasi-one dimensional configuration. Among the possibilities is strongly directional superradiant emission of single photons and a collective Lamb shift of atomic resonances. In this presentation, several of these phenomena will be introduced and discussed.

Friday, March 11th, 2016
4:00-5:00 pm
Goudsmit Conference Room, LP 208