Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Superradiance in Spherical Layered Nanostructures SERGUEI GOUPALOV, Jackson State Univ — We propose a design of a spherically symmetric nanostructure consisting of alternate concentric semiconductor and dielectric layers. The exciton states in different semiconductor layers of such a structure interact via the common electro-magnetic field of light. We show that, if the exciton states in N semiconductor layers are in resonance with one another, then superradiant states can emerge under optical excitation of such a structure. We discuss the conditions under which superradiance can be observed and show that they strongly depend on the valence-band structure of the semiconductor layers.

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Date submitted: 06 Nov 2015 Electronic form version 1.4