

Abstract Submitted
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Superradiance with Classical Dipoles ARKAN HASSAN, PERRY RICE, Miami University — Recently Solano et.al. observed both sub- and superradiance in a system of cold atoms trapped around an optical nanofiber. We calculate the radiation of a group of classical dipoles, a suitable approximation to atoms predominantly in the ground state. We find that initially there is superradiant behavior, and then a long subradiant tail. We consider one ball of atoms, two balls of atoms at different ends of the fiber, and two balls that have interactions via the fiber. For one ball we predict collective effects for a large number of atoms. For two uncorrelated balls, we find a spatial interference pattern dependent on the spacing between them, but no collective effects. Adding the long range coupling via the fiber does result in collective effects as observed.

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