OSS08-2008-000056

Abstract for an Invited Paper
for the OSS08 Meeting of
the American Physical Society

Correlated Spontaneous Emission in Atomic and Nuclear Arrays

MARLAN O. SCULLY, Texas A&M University and Princeton University

In a recent paper [1], the emission of radiation from an ensemble of N atoms excited by a single photon was studied. That paper stimulated spirited discussions and debate. For example, it was argued at the 2006 Volga River conference on quantum control [2] that the important conclusion that follows from the nuclear physics γ–ray studies of this problem was the prediction of the suppression of the resonance level width. In this connection, the results of [1] were argued to be incorrect since no line narrowing was reported. In the present talk, it is shown that there is no radiative suppression associated with the Dicke state given in [1]. However, the interplay between quantum optics (Dicke super and subradiant states) and nuclear physics (forward scattering of γ radiation) provides interesting problems and insights.

[1] M.Scully, E.Fry, C.H.R. Ooi & K.Wodkiewicz, Phys.Rev.Lett. 96, 010501 (2006)
[2] Laser Physics, 2007, vol 17, no. 5, pp. 635-646