

Optical superradiance on cooperative transitions in metamaterials

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Abstract

The possibility of observing collective spontaneous emission upon a cooperative transition in an ensemble of interacting optical center pairs embedded in a metamaterial is investigated. It is shown that when the effective refractive index tends to zero, the relaxation rate of excited atomic states substantially decreases, allowing us to observe collective effects on weaker cooperative transitions. © Allerton Press, Inc., 2012.

<http://dx.doi.org/10.3103/S1062873812030409>
