

Abstract Submitted
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Superradiant cascade emission HSIANG-HUA JEN, STEWART JENKINS, BRIAN KENNEDY, Georgia Institute of Technology — We develop a quantum theory of counter-propagating light fields produced in a two-photon cascade emission in a dense atomic vapor. We include the effects of radiative atom-atom coupling in the medium, leading to Heisenberg-Maxwell equations with superradiant characteristics. Our model relates to experiments in ultra-cold rubidium vapor which aim to generate entangled light fields at telecom wavelength and matter spin waves. These in turn provide building blocks for a long-distance quantum repeater.

Stewart Jenkins
Georgia Institute of Technology

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