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**Hanbury Brown–Twiss Correlations for a Driven Superatom**[1]
HUY NGUYEN, JACOB LAMPEN, ALISHER DUSPAYEV, HIKARU TAMURA, PAUL BERMAN, ALEX KUZMICH, Univ of Michigan - Ann Arbor — Hanbury Brown–Twiss interference and stimulated emission, two fundamental processes in atomic physics, have been studied in a wide range of applications in science and technology. We study interference effects that occur when a weak probe is sent through a gas of two-level atoms that are prepared in a singly excited collective (Dicke or "superatom") state and for atoms prepared in a factorized state. We measure the time-integrated second-order correlation function of the output field as a function of the delay between the input probe field and radiation emitted by the atoms and find that, for the Dicke state, is twice as large for zero delay as it is for large delays, while for the product state, this ratio is equal to 3/2. The results agree with those of a theoretical model in which any effects related to stimulated emission are totally neglected—the coincidence counts measured in our experiment arise from Hanbury Brown–Twiss interference between the input field and the field radiated by the atoms.

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