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Collective emission and collective quantum jumps of Rydberg atoms LYNDON CAYAYAN, JACOB PAULEY, JAMES CLEMENS, Miami University — We investigate collective quantum jumps in a driven, damped system of Rydberg atoms with a long range interaction in their excited states. The damping may be independent spontaneous emission or collective spontaneous emission depending on the spatial arrangement of the atoms. We present the probe spectrum and photon statistics of the emitted light as a function of the number of atoms, the strength of the long range interaction, the spontaneous emission rate and the type of emission. We also present individual stochastic trajectories as the atoms make collective jumps between a low excitation state and a high excitation state.

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