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Probe spectrum of Rydberg atoms undergoing collective spontaneous emission LYNDON CAYAYAN, JACOB PAULEY, JAMES CLEMENS, Miami University — We study a collection of N driven, damped Rydberg atoms with either independent or collective damping. The strong dipole-dipole interaction of the atoms gives rise to a Rydberg blockade and collective quantum jumps between a dark state with most atoms in the ground state and a bright state with most atoms in the excited state. Using the Quantum Toolbox in Python (QuTiP) we calculate the probe spectra of the Rydberg atoms for varying dipole-dipole interaction strengths and compare results for collective and independent emission.

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