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W-State Characterization and Progress Toward Non-Destructive State-Selective Measurements with an EMCCD Camera in Rb[1]
MATTHEW EBERT, MINHO KWON, MARK SAFFMAN, THAD WALKER, University of Wisconsin Madison — We present a method for differentiating k-partite W-State entanglement from other singly-excited states, under the assumption that there are less than two excitations, valid for Rydberg blockade experiments. We use this method to demonstrate 9 atom W-State entanglement generation via Rydberg blockade with two separate state rotations: a Jx Microwave rotation experiment and a Jz Ramsey fringe experiment. We also report progress towards a non-destructive state-selective readout with an EMCCD camera, which could increase experimental data rates significantly.

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