Abstract Submitted
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Characterizing high-n quasi-one-dimensional strontium Rydberg atoms[1] MORITZ HILLER[2], SHUHEI YOSHIDA, JOACHIM BURGDÖRFER, Institute for Theoretical Physics, Vienna University of Technology, SHUZHEN YE, XINYUE ZHANG, F. BARRY DUNNING, Department of Physics and Astronomy, Rice University — The production of high-n, $n \sim 300$, quasi-one-dimensional strontium Rydberg atoms by two-photon excitation of selected extreme Stark states in the presence of a weak dc field is examined using a crossed laser-atom beam geometry. The polarization of the product states is probed using three independent techniques which are analyzed with the aid of classical-trajectory Monte Carlo simulations that employ initial ensembles based on quantum calculations using a two-active-electron model. Comparisons between theory and experiment demonstrate that the product states have large dipole moments, $\sim 1.0-1.2n^2$ $a.u.$ and that they can be engineered using pulsed electric fields to create a wide variety of target states.

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