Abstract Submitted
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Quantum control using the Landau-Zener effect[1] TAMAS BUDNER, JACOB HOLLINGSWORTH, MICHAEL VENNETTILLI, RYAN ZMIEWSKI, Ursinus College, DONALD P. FAHEY, Bryn Mawr College, THOMAS J. CARROLL, Ursinus College, MICHAEL W. NOEL, Bryn Mawr College — We excite ultracold rubidium atoms in a magneto-optical trap to a coherent superposition of two $|m_j|$ sublevels of a Rydberg state. After some delay, during which the relative phase of the superposition components can evolve, we apply a field ionization pulse (rise time ~ 2 μs). The atoms traverse an avoided crossing in the Stark levels as they ionize. We find that we can control the final state distribution by varying the delay time and hence the relative phase. We present calculations which will be compared to the data.

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