

Abstract Submitted
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STIRAP Production of Rydberg Helium: Effects of Thermal Radiation and Level Multiplicity¹ PETR M. ANISIMOV, YUAN SUN, HAROLD METCALF, Stony Brook University, Stony Brook, NY 11794-3800 — Stimulated Raman Adiabatic Passage (STIRAP) has been used in a series of experiments to excite Helium atoms to Rydberg states starting from the metastable 2^3S state. The usual picture of STIRAP in a three level system suggests that experimental efficiency should be nearly 100%, but our measured efficiency was limited to less than 70%. Here we report a detailed model of the STIRAP process in metastable Helium that accounts for the multilevel structure of the transition and effects of thermal radiation that lead to ionization as well as population redistribution among Rydberg states.

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