

Abstract Submitted
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Polarization Effects in STIRAP Between Triplet He States¹ YUAN SUN, PETR M. ANISIMOV, HAROLD METCALF, Stony Brook University, Stony Brook NY 11794-3800 — We studied the effect of laser polarization on the excitation of helium atoms from the metastable 2^3S state to Rydberg nS states via the intermediate 3^3P states. For STIRAP, an infrared laser connects the $3^3P_{2,1,0}$ and nS levels, and then 389 nm uv light drives the 2^3S_1 to $3^3P_{2,1,0}$ transition. The light polarizations determine the nature of the couplings between the different Zeeman sublevels, and interference may arise in those different excitation paths. Rydberg atoms are suitable for this experiment because of their relatively long life times so the nS populations are readily measured. The correspondence between polarizations and nS level populations have been studied both theoretically and experimentally, and the interference patterns are revealed.

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