Abstract Submitted
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Efficiency of STIRAP as a function of buffer gas pressure: sodium in argon JIM L. HICKS, SUSAN D. ALLEN, JOEY BURDIN, Arkansas State University, WILLIAM D. MURRY, J. BRUCE JOHNSON, Arkansas State University — We present the dependence of the efficiency of the STIRAP process on sodium vapor as a function of the pressure of an argon buffer gas. These results elucidate the nature of how the coherent STIRAP process is spoiled by the incoherent process of random collisions. The transitions used for the pump and Stokes pulses are 3p ($^2P_{1/2}$) $\leftarrow$ 3s ($^2S_{1/2}$) and 5s ($^2S_{1/2}$) $\leftarrow$ 3p ($^2P_{1/2}$) respectively. Light to couple the states was produced by two synchronously pumped OPG/OPAs (pumped by the 355 nm light from a picosecond YAG). The light pulses were approximately 15 ps long and were near-Fourier-transform-limited. Fluorescence from the 5s state to both 3p states ($^2P_{1/2}$, $^2P_{3/2}$), from both 3p states to the 3s state, and from the 4p states to the 3s state was measured with a monochromator using a gated CCD to eliminate Rayleigh scattered light.

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