

Abstract Submitted
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Modeling rubidium optical pumping in the intermediate buffer-gas-pressure regime¹ DALE TUPA, Los Alamos Natl Lab, TIMOTHY GAY, University of Nebraska - Lincoln — Applications, such as a spin-exchange polarized electron source,² drive the need to understand the optical pumping process of Rb in the presence of 0.01 - 1.0 torr buffer gas. Despite the complexity of the systems, appropriate assumptions to simplify the calculations produce straightforward models that can be solved with programming languages such as Mathematica, or even with an Excel spreadsheet. These simplified equations adequately describe the system, as demonstrated by comparing the calculated results to experimental data that includes the effects of radiation trapping,³ a spin-reversal phenomenon,⁴ and a method of measuring the polarization with a transverse optical probe.⁵

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²Phys. Rev. A 88, 060701(R)

³Phys. Rev. A 75, 023401

⁴Phys. Rev. A 82, 033408

⁵Phys. Rev. A 86, 053416

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