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Alkali-metal spin-destruction rates measured with pulsed EPR.[1]
ZAHRA ARMANFARD, DAVID J. MORIN, BRIAN SAAM, Washington State University — Determination of the efficiency of spin-exchange optical pumping (SEOP) depends on careful measurement of both the rate of spin exchange between the alkali-metal and noble-gas atoms and the rate of alkali-metal spin destruction from all sources. Spin-destruction rates are not well understood [1], particularly for Cs and for the range of parameters that characterize ^{129}Xe SEOP. Spin-exchange efficiency is relevant to determining the appropriate alkali-metal partner (Rb or Cs) for efficient production of hyperpolarized ^{129}Xe for applications such as lung imaging. We have developed an optically detected pulsed-rf EPR technique that allows us to measure the line width [2] and spin relaxation "in the dark" of alkali-metal hyperfine resonances with significantly improved SNR over cw-rf techniques. We present preliminary results of Rb and Cs spin-destruction measurements as a function of Xe pressure. [1] I. A. Nelson and T. G Walker, Phys. Rev. A **65**, 012712 (2001). [2] A. Ben-Amar Baranga, et al., Phys. Rev. A **58**, 2282 (1998).

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