

Abstract Submitted
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Spin manipulating vector & tensor polarized deuterons stored in COSY V.S. MOROZOV, A.D. KRISCH, M.A. LEONOVA, R.S. RAYMOND, D.W. SIVERS, V.K. WONG, Univ. of Michigan, Ann Arbor, MI 48109-1120, K. YONEHARA, IIT, Chicago, IL 60616, R. GEBEL, A. LEHRACH, B. LORENTZ, R. MAIER, D. PRASUHN, A. SCHNASE, H. STOCKHORST, Forschungszentrum Juelich, IKP, D-52425 Juelich, D. EVERSHEIM, F. HINTERBERGER, H. ROHDJESS, K. ULBRICH, Helmholtz Inst., Univ. Bonn, D-53115 Bonn — We recently studied the spin manipulation of a simultaneously vector and tensor polarized deuteron beam stored at 1.85 GeV/c in the COSY Cooler Synchrotron. Using the EDDA detector, we first calibrated the vector and tensor analyzing powers, which were earlier unmeasured at 1.85 GeV/c; this allowed us to measure the absolute values of both the vector and tensor polarizations. Then we manipulated the deuteron's polarization by sweeping the frequency of a ferrite rf dipole through an rf-induced spin resonance. We first experimentally determined the resonance's frequency and then varied the rf dipole's frequency sweep range Δf and frequency ramp time Δt to maximize the spin-flip efficiency. We then obtained a measured vector spin-flip efficiency of $98.5 \pm 0.3\%$ [1]. We also studied, in detail, the behavior of the tensor polarization during spin manipulation; these new data may allow a better understanding of the interesting quantum behavior of spin-1 bosons. This research was supported by the German BMBF Science Ministry. [1] V.S. Morozov et al., Phys. Rev. ST Accel. Beams 8, 061001 (2005).

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