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Unexpected reduction of rf spin resonance strength for stored polarized deuterons. M.A. LEONOVA, A.D. KRISCH, V.S. MOROZOV, R.S. RAYMOND, D.W. SIVERS, V.K. WONG, Univ. of Michigan, Ann Arbor, MI 48109-1120, R. GEBEL, A. LEHRACH, B. LORENTZ, R. MAIER, D. PRASUHN, A. SCHNASE, H. STOCKHORST, Forschungszentrum Juelich, IKP, D-52425 Juelich, F. HINTERBERGER, K. ULBRICH, Helmholtz Inst., Univ. Bonn, D-53115 Bonn — The ratio $\varepsilon_{FS}/^{*}\varepsilon_{Bdl}$ of the deuteron's measured rf spin resonance's strength, ε_{FS}, obtained by fitting spin-flipping data to the Froissart-Stora equation, to the $^{*}\varepsilon_{Bdl}$ calculated from our rf magnet's $\int Bdl$ was about 7 times smaller than predicted. We studied this discrepancy using a 1.85 GeV/c vertically polarized deuteron beam stored in COSY in Jülich, Germany, by sweeping the frequency of an rf-dipole through an rf-induced spin resonance. We studied the dependence of $\varepsilon_{FS}/^{*}\varepsilon_{Bdl}$ on the beam size, the momentum spread $\Delta p/p$, the distance from a 1^{st}-order intrinsic spin resonance and the frequency sweep range Δf. We found no dependence on the beam size, $\Delta p/p$ or Δf. We saw a strong enhancement of $\varepsilon_{FS}/^{*}\varepsilon_{Bdl}$ with a hyperbolic dependence on the distance from the intrinsic resonance. This did not explain the reduction of $\varepsilon_{FS}/^{*}\varepsilon_{Bdl}$ far from the intrinsic resonance. Thus, this small $\varepsilon_{FS}/^{*}\varepsilon_{Bdl}$ ratio may be due to some unexpected behavior of relativistic spin-1 deuterons in an rf dipole. (Supported by the German BMBF Science Ministry.)

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