



The Jefferson Lab Frozen Spin Target

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A frozen spin polarized target, constructed at Jefferson Lab for use inside a large acceptance spectrometer, is described. The target has been utilized for photoproduction measurements with polarized tagged photons of both longitudinal and circular polarization. Protons in TEMPO-doped butanol were dynamically polarized to approximately 90% outside the spectrometer at 5 T and 200--300 mK. Photoproduction data were acquired with the target inside the spectrometer at a frozen-spin temperature of approximately 30 mK with the polarization maintained by a thin, superconducting coil installed inside the target cryostat. A 0.56 T solenoid was used for longitudinal target polarization and a 0.50 T dipole for transverse polarization. Spin-lattice relaxation times as high as 4000 hours were observed. We also report polarization results for deuterated propanediol doped with the trityl radical OX063.

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