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## Studies of the spin coherence time of protons at COSY

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The search for the Electric Dipole Moments (EDM) of charged particles in storage rings necessitates polarized beams with long Spin Coherence Time (SCT) of the circulating beam. The SCT is the time during which the RMS spread of the orientation of spins of all particles in the bunch reaches one radian. A long SCT is needed to observe the coherent effect of a polarization build-up induced by the EDM. For deuterons a SCT of 1000 s has been achieved at the COoler SYNchrotron COSY (Jülich, Germany). Accomplishing such long SCT for protons is far more challenging due to their higher anomalous magnetic moment, but essential for the planned EDM experiments. It has been shown that for protons, the SCT is strongly influenced by nearby intrinsic and integer spin resonances. The strengths of the latter have been calculated for a typical optics setting of COSY and the overall influence on the SCT was predicted. In addition, the efficiency of proton spin flipping with an RF-solenoid from initially vertical direction into the ring plane is also investigated.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

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