

# Spin Filtering Studies At COSY And AD

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The high physics potential of experiments with stored high-energy polarized antiprotons led to the proposal of PAX (Polarized Antiproton eXperiment) for the High Energy Storage Ring (HESR) of the FAIR at GSI (Darmstadt/Germany). It is proposed to polarize a stored antiproton beam by means of spin filtering with a polarized hydrogen (deuterium) gas target. The feasibility of spin filtering has been demonstrated in the FILTEX experiment [2]. The theoretical understanding of the collision of an (anti)proton with a polarized hydrogen (deuterium) target is crucial for the success of the filtering. However, there exist two competing theoretical interpretations: one with substantial filtering of (anti)protons by polarized electrons [3], while the second one suggests a self-cancellation of the electron contribution to filtering [4]. In order to clarify this situation several experimental studies with protons (at COSY/Jülich) as well as antiprotons (at AD/CERN) have to be carried out. These include the set-up of a polarized internal gas target (PIT) immersed into a low- $\beta$  section, as well as a Siberian snake for longitudinal filtering. In this talk the setup and operation modes of the PIT including an Atomic Beam Source (ABS), the target cell and a Breit-Rabi Polarimeter (BRP), is discussed. Furthermore, the design of the quadrupole magnets of the low- $\beta$  section and the Siberian snake and their incorporation into the COSY/AD lattice will be presented.

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