Suppressing Intrinsic Spin Harmonics at the AGS[1]

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Over the last decade several improvements have been made to increase the polarization of the proton beam at the Brookhaven Alternating Gradient Synchrotron (AGS) [1]. A partial snake was installed to overcome all imperfection resonances in the energy range of the AGS [2]. The rf dipole concept to preserve polarization at strong intrinsic resonances has been demonstrated at the AGS for the first time [3].

Polarization losses have been observed at weak intrinsic resonances. One method to preserve polarization at weak intrinsic resonances is to change the betatron tune rapidly before crossing the resonance. Due to the non-adiabatic nature of this tune jump, the beam emittance will increase [4]. More efficient is a method called suppressing intrinsic spin harmonics, first successfully applied at the Cooler Synchrotron COSY [5]. In this presentation we describe how to use this method at the AGS.

References

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