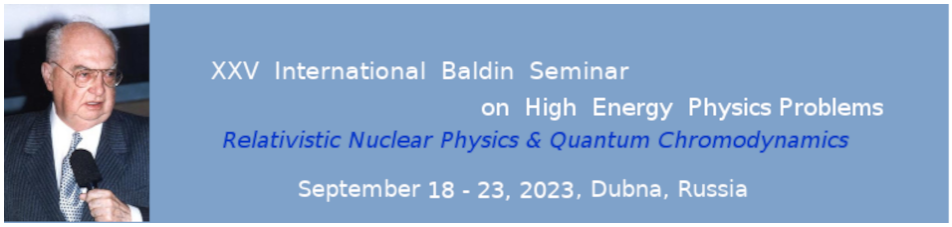

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Spin flipping of a deuteron beam by correcting quadrupoles in Nuclotron/JINR

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A novel method of deuteron spin-flipping by the spin resonance crossing due to the betatron tunes shift is proposed. The resonance is induced by Nuclotron corrective quadrupoles, which allow one to control the resonance detuning and its strength simultaneously. Spin-flipping of deuterons is provided by adiabatic crossing of the induced resonance due to a slow change of the vertical betatron tune. The advantage of this approach is that during induced resonance intersection the energy of the beam remains unchanged and is determined by the selected tune of the vertical betatron oscillations. The polarization profile, which depends on the betatron amplitudes distribution and the resonance crossing rate, is calculated. The feasibility of experimental verification of deuteron spin-flipping in Nuclotron is discussed.

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