

XXV International Baldin Seminar on High Energy Physics Problems  
"Relativistic Nuclear Physics and Quantum Chromodynamics"



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on High Energy Physics Problems  
*Relativistic Nuclear Physics & Quantum Chromodynamics*

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## Preservation of the proton polarization up to 3.5 GeV/c in the Nuclotron at JINR using correcting dipoles and a weak solenoid

*Friday, 22 September 2023 17:30 (20 minutes)*

In the proton momentum range up to 3.5 GeV/c there are no intrinsic spin resonances and proton depolarization is associated with the crossing of integer spin resonances. Corrective dipoles are used to deliberately increase the strength of integer resonances by controlled deviation of the closed orbit. When the orbit is deviated up to 10 mm and the arch dipole field ramp rate is of 0.6 T/s, all integer resonances will cross adiabatically without loss of polarization apart from the first two resonances at energies of 108 and 631 MeV. At these energies the adiabatic crossover is provided by a weak solenoid with a field integral of 0.05 T m. External targets experiments and injections of polarized protons into the NICA collider up to 3.5 GeV/c will become feasible.

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