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Spin transparency mode of deuterons in the entire energy range at the Nuclotron/JINR

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To carry out experiments on the deuteron beam extracted from the Nuclotron (JINR, Dubna), both transverse and longitudinal polarization are required. At present, there is no experimentally tested solution for obtaining longitudinal polarization of deuterons for arbitrary beam energies. Any direction of deuteron polarization, including longitudinal, in the entire beam energy range can be obtained in the spin transparency mode by symmetric installation of solenoids in each of the eight superperiods of the Nuclotron. The field integral of one solenoid does not exceed 20 T·m. The deuteron polarization orientation is controlled by a spin navigator realized by small fields variations of the solenoids.

Summary

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