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Impedance model of the NICA collider for experiments at SPD

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Effective studying of the nucleon spin structure in colliding polarized proton beams is possible with the pp collision luminosity L=1 10^32 cm^(-2) s^(-1) at the energy range of Ecm=27 GeV. Reaching of necessary level of the luminosity is connected with the accumulation of n=2 10^13 particles in each of the collider rings and solving the problems of stable beam dynamics. Building of an impedance model is necessary step for determining at an early stage of design possible limitations on the stored beam intensity, and reducing the influence of the impedance effect on the beam dynamics. In the report the physics of the beam motion in an accelerator chamber is considered, values of effective longitudinal and transverse impedances of the collider NICA are shown, the influence of effective transverse impedance on the betatron tune shift is described.

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