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Polarized ion beams in atomic physics research

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In our presentation we will review the recent proposals for the production of the polarized ion beams and the methods for measuring of their polarization. Special emphasis will be placed on the application of atomic physics techniques. In particular, we will show how the charge transfer processes, occurring in storage rings, may serve as very sensitive probes of the heavy-ion spin polarization [1,2]. Besides the discussion of the operation and diagnostics of polarized beams, we shall stress their importance for the studies on fundamental symmetries in both atomic and nuclear physics. In this line, we recall the application of (polarized) highly-charged ions for for investigating parity nonconservation effects, the existence of a permanent electric dipole moment, or for testing the Standard Model [3].

References:

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[3] L. Labzowsky and A. Prozorov, J. Phys.: Conf. Ser. 72, 012010 (2007).

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