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Search for axions at NICA

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Besides offering a solution to the strong CP problem in QCD, axions are one of the prime candidates for dark matter. One of manifestation of the galactic axion halo of light “invisible” axions is generation of the oscillating electric dipole moment of nucleons and light nuclei, and the NMR like rotation of spins in the axion induced pseudomagnetic field. For spins in storage rings the pseudomagnetic field is 3 orders in magnitude stronger than that acting on spins at rest in terrestrial laboratories.

The prospects for spins as resonant axion antennas at the NICA facility will be discussed. The sensitivity to axions can be strongly enhanced complementing NICA rings with bypasses, which can also make possible a search for the deuteron electric dipole moment.

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