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Search for Time-Reversal Invariance Violation: why complex systems are better?[1] VLADIMIR GUDKOV, Univ of South Carolina — Searches for electric dipole moments (EDMs) in atomic and molecular systems may provide better sensitivity to Time Reversal Invariance Violating (TRIV) interactions than neutron EDM due to enhancement factors related to complex structure of the system. We consider advantages and disadvantages of many-body nucleon system for the search for TRIV interactions in neutron scattering on heavy nuclei. The absence of final state interactions for the set of specific observables makes these experiments complementary to neutron and atomic electric dipole moment (EDM) measurements. Moreover, in neutron scattering the observables are not a static parameter, as EDM, which leads to an additional enchantment factors for TRIV interactions. Based on these observations we show that neutron scattering experiments at new high flux Spallation Neutron Sources can open new paradigm in the search for TRIV in hadronic interactions and essentially improve the current limits on these TRIV interactions obtained from neutron and atomic EDMs.

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