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NOPTREX: A Neutron Optics Time-Reversal Violation Experiment

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**The forward neutron-nucleus scattering amplitude has a T-odd, P-odd component proportional to $\sigma_n \cdot I \times k_n$. Thus the double spin-dependent neutron absorption cross section is a suitable observable in which to search for a new source of CP-violation needed to explain the baryon asymmetry of the universe. Unlike other complementary observables such as the electric dipole moment of fundamental particles, this effect can be amplified by up to a factor of 10^6 by the interference of closely-lying mixed parity states in heavy nuclei such as ^{139}La, ^{131}Xe, ^{81}Br, and ^{117}Sn. The goal of the NOPTREX collaboration is to prepare a search for time-reversal invariance violation(TRIV) in neutron scattering by performing precision measurements of hadronic parity violation (HPV) and of $\kappa(J)$, which relates the sensitivity of TRIV to that of HPV. I will present an overview of the international effort coordinated across four neutron sources, towards building the NOPTREX experiment.

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