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# The Pomeron spin-flip and its measurements

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We investigate the spin-flip component of the Pomeron using the single spin asymmetry, $A_N(t)$, arising from Coulomb-nuclear interference (CNI) in small-angle elastic scattering.
The study of elastic proton-nucleus scattering is important because suppresses or excludes the contributions from iso-vector Reggeons which are predominantly spin-flip, and might have a significant impact on the results of fixed-target experiments at RHIC.

However, previous theoretical attempts fail to explain the recent data from the PHENIX experiment at RHIC on polarized proton-gold scattering, exposing a nontrivial $t$-dependence of $A_N$, strongly contradicting theoretical predictions. We found that the absorptive corrections in the Coulomb amplitude of $pA$ elastic scattering play a significant role. Namely, interference of ultra-peripheral and central collisions leads to a dramatic changes in $A_N(t)$.
We also include less significant corrections from Gribov inelastic shadowing and from $NN$ correlations.

Finally, we present that the non-zero hadron spin-flip amplitude is required to describe the single spin asymmetry nuclear data. This allows us to make conclusions about the spin-flip pomeron behavior and its impact.

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