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Short-range correlations in the mirror nuclei ${}^3\text{H}$ and ${}^3\text{He}$

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Short-range correlations (SRC) in nuclei - nucleon pairs with large relative momentum, but small total momentum - arise from the strong, short-distance NN interaction. These are important components of the nuclear ground state, but it is difficult to study their contributions in low-energy reactions. GeV-scale electron scattering measurements have been used to study scattering from SRCs in nuclei and to map out their strength and isospin structure in nuclei for a range of light and heavy nuclei. Measurements using two-nucleon knockout have shown that np-SRCs dominate over pp-SRCs, although these measurements involve measuring a three-particle final state and are limited by statistics and corrections for nucleon rescattering in the final state.

We present a new measurement providing an extraction of the isospin dependence of SRCs with dramatically improved precision over previous results by comparing inclusive scattering from the mirror nuclei ${}^3\text{H}$ and ${}^3\text{He}$. In this experiment, the target provides the sensitivity to isospin structure using clean and well-understood inclusive scattering. We find that np-SRCs are enhanced relative to pp-SRCs in ${}^3\text{He}$, but this enhancement is significantly smaller than observed in heavier nuclei. Understanding these unexpected and, as yet, unexplained result will help illuminate the structure of these light nuclei and may allow us to better constrain the short-range part of the N-N interaction.

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