

Physics Division Colloquium

5 February 2021

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***Short-Range-Correlation Physics in Atomic Nuclei***

Short-range correlations (SRCs) in atomic nuclei are usually identified as components of the nuclear wave function with momenta well above the Fermi momentum. There has long been an apparent need for SRCs to account for measured cross sections, but the situation has been murky until recent knock-out experiments succeeded in cleanly isolating this physics. An SRC phenomenology has been developed that accounts for the observations, but it seems to be at odds with successful descriptions of nuclear structure, such as the shell model. The application of the renormalization group (RG) can make sense of this conflict. RG methods are used to analyze critical phenomena in condensed matter and evolve the strong coupling and parton distributions in high-energy quantum chromodynamics. Applied to nuclei, the RG shows how SRC physics is manifested differently at varying resolution scales. I will illustrate how the RG can bridge low- and high-resolution treatments of the same experiment, shedding light on the implications of SRC physics and on long-standing discrepancies between theory and experiment.

To meet with the speaker (remotely), please contact the host [Kévin Fosse](#).