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Functional Renormalization Group Method for Finite Nuclei

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The functional renormalization group (FRG) is a powerful tool for investigating effects beyond the mean-field approximation. In this presentation, we apply the FRG method to finite nuclei and discuss our findings for finite nuclei. Specifically, we implement FRG results into relativistic continuum Hartree-Bogoliubov theory, which treats both pairing and continuum effects in a self-consistent manner. As a first step, we examine symmetric nuclei and analyze how fluctuations influence key nuclear properties, such as binding energies and charge radii. Additionally, we explore the role of partial chiral symmetry restoration in finite nuclei, as our model Lagrangian respects both chiral symmetry and its spontaneous breaking.

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