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Probing Short-Range NN Correlations via Nuclear Structure and Reaction Studies at GSI energies

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Nucleon-nucleon correlations are essential for understanding the structure of nuclei. They are responsible for the depletion of quantum states below the Fermi level and population of the states above it, that is a characteristic feature of dense many-body systems of strongly interacting fermions. The NN correlations are often distinguished into long- and short-range types depending on their spatial separation and the sensitive range of the NN potential. In particular short-range correlation (SRC) in light and heavy stable nuclei are known to be dominated by deuteron-like n-p pairs with spin $S=1$, while their presence and role in unstable nuclei still remains an open question. The radioactive-ion beam facility at GSI provides a unique opportunity to investigate the SRC component of isospin-asymmetric unstable nuclei. This can be achieved due to the available secondary-beam energies in GeV per nucleon range, and a possibility to perform inverse-kinematics studies. In this talk, an overview will be given for the recent experimental program on SRC physics at the R3B setup at GSI.

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