

# Объединенный институт ядерных исследований

Общеинститутский семинар-коллоквиум

## “The Transparent Nucleus: SRC and single nucleon knockout inverse kinematics measurements using a 48 GeV/c carbon beam at JINR”

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**Abstract:** New results from a measurement of proton knockout reactions, performed at the JINR in Dubna with a 48 GeV/c Carbon-12 beam, demonstrate the feasibility of accessing properties of short-range correlated nucleons in nuclei with hadronic probes and by using inverse kinematics. We extract the ground-state distributions of single nucleons and correlated nucleon pairs (SRC) in quasi-free kinematics in an exclusive measurement by detecting the two scattered protons at large angles in coincidence with an intact heavy fragment. The post-selection of heavy fragments is shown to suppress the otherwise large contributions from final-state interactions. This allowed for the first time to select and study properties of correlated nucleon pairs in inverse kinematics, which showcases a new ability to study the short-distance structure of short-lived, neutron-rich nuclei at the forthcoming radioactive high energy facilities. Information on the formation and the properties of these pairs in a neutron-rich nuclear environment, as extracted from such measurements, will provide a solid basis for the understanding of the properties of the dense cold neutron-rich matter in neutron stars.

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