

Exploring Nucleon Structure through radiative decay of J/\psi

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We propose to investigate short-range correlations (SRCs) in nuclei by studying sub-threshold photoproduction of ϕ particles in an electron-positron collision experiment. We present a direct experimental signature for SRCs, which is deemed achievable using the Beijing Spectrometer III (BESIII). The cross sections for sub-threshold production, as well as the likelihood of detection by BESIII, are calculated. These results underscore the substantial potential of BESIII in elucidating the fundamental physics behind the nuclear modification of parton distribution functions. This proposed experimental analysis of photon-nucleon interactions in electron-positron collisions represents uncharted territory, promising fresh prospects for applications in both particle and nuclear physics.

Primary author: 徐/XU, 吉/Ji (兰州大学)

Presenter: 徐/XU, 吉/Ji (兰州大学)

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