Coulomb Dissociation Measurement in Isobaric Collisions at $\sqrt{s_{NN}} = 200$ GeV with the STAR Experiment

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Abstract

5	The STAR experiment collected large-statistics datasets from isobar collisions of ${}^{96}_{44}$ Ru + ${}^{96}_{44}$ Ru
,	and ${}^{96}_{40}$ Zr + ${}^{96}_{40}$ Zr ions, offering a valuable opportunity to study Coulomb dissociation via Ultra-
3	peripheral collisions (UPC). Despite having identical mass numbers, these isobars exhibit distinct
)	proton and neutron distributions, leading to variations in their charge and neutron density profiles.
)	These differences are expected to manifest in distinct Coulomb dissociation processes, particularly
L	in the neutron emission spectra measured by the STAR Zero-Degree Calorimeters.

In this talk, we present new measurements on neutron emission from ${}^{96}_{44}\text{Ru} + {}^{96}_{44}\text{Ru}$ and ${}^{96}_{40}\text{Zr} + {}^{96}_{40}\text{Zr}$ collisions at $\sqrt{s_{NN}} = 200$ GeV. By analyzing these results, we aim to gain deeper insights into the nuclear structure properties of isobaric nuclei, including their implications for neutron skin. These findings contribute to a better understanding of electromagnetic interactions and their correlation with nuclear studies in heavy-ion collisions.