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Photoproduction of e^+e^- in peripheral isobar collisions

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We investigate the photoproduction of di-electrons in peripheral collisions of $^{96}_{44}\text{Ru}+^{96}_{44}\text{Ru}$ and $^{96}_{40}\text{Zr}+^{96}_{40}\text{Zr}$ at 200 GeV. With the charge and mass density distributions given by the calculation of the density functional theory, we calculate the spectra of transverse momentum, invariant mass and azimuthal angle for di-electrons at 40-80% centrality. The ratios of these spectra in Ru+Ru collisions over to Zr+Zr collisions are shown to be smaller than $(44/40)^4$ (the ratio of Z^4 for Ru and Zr) at low transverse momentum. The deviation arises from the different mass and charge density distributions in Ru and Zr. So the photoproduction of di-leptons in isobar collisions may provide a new way to probe the nuclear structure.

Category

Theory

Collaboration (if applicable)

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