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## Effect of nuclear distribution uncertainties on the search for the chiral magnetic effect (CME) in isobaric collisions of Ru+Ru and Zr+Zr collisions at RHIC

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The search for the chiral magnetic effect (CME) in isobaric collisions of Ru+Ru and Zr+Zr at RHIC was motivated by the assumed similarity of the backgrounds (e.g.,  $v_n$ ,  $N_{\text{chg}}$ ) for the two isobars. The effects of nuclear structure differences and deformation can lead to essential differences in the backgrounds for the two isobars. Here, we use a quark Glauber model, validated in earlier studies of small and large systems, to study the effects of nuclear distribution uncertainties, especially the details of a Zr halo and nuclear shape fluctuations, on background-related variables such  $\varepsilon_n$ , and particle production for the isobars. The influence of such uncertainties on both particle production and  $\varepsilon_n$  is significant; they provide invaluable constraints for pinning down the requisite differences for CME study in isobaric collisions. They also show that a data-model study of relevant bulk observables could constrain nuclear distribution parameters.

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