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Inferring nuclear structure from heavy isobar collisions using Trajectum

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Nuclei with equal number of baryons but varying proton number (isobars) have many commonalities, but differ in both electric charge and nuclear structure. Relativistic collisions of such isobars provide unique opportunities to study the variation of the magnetic field, provided the nuclear structure is well understood. In this Letter we simulate collisions using several state-of-the-art parametrizations of the 9640Zr and 9644Ru isobars and show that a comparison with the exciting STAR measurement arXiv:2109.00131 of ultrarelativistic collisions can uniquely identify the structure of both isobars. This not only provides an urgently needed understanding of the structure of the Zirconium and Ruthenium isobars, but also paves the way for more detailed studies of nuclear structure using relativistic heavy ion collisions.

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