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Indications for the Chiral Magnetic Effect in Ion-Ion collisions at RHIC

NB Se isso for confirmado, isso seria uma grande descoberta, pois sinalizaria quebra de paridade no QCD. consulte https://en.wikipedia.org/wiki/Chiral_magnetic_effect

Validation of the Chiral Magnetic Effect (CME) in the magnetized chiral relativistic quark-gluon plasma (QGP) produced in heavy-ion collisions, can provide key insights into anomalous transport in the QGP and the connections between chiral symmetry restoration, axial anomaly and gluonic topology in QCD. Charge separation measurements play a pivotal role in ongoing searches for the Chiral Magnetic Effect (CME). Recently, a charge-sensitive correlator $R_{\Psi_m}(\Delta S)$ [1], designed to discern between background- and CME-driven charge separation, was used to carry out a detailed set of measurements, relative to both the 2nd- (Ψ_2) and 3rd-order (Ψ_3) event planes, for several collision systems (A+A(B)). The measurements indicate nearly flat to convex $R_{\Psi_m}(\Delta S)$ distributions for the measurements relative to Ψ_3 and those relative to Ψ_2 for the p(d)+Au systems, consistent with the essentially random \vec{B} -field orientations for these measurements. By contrast, the A+A measurements relative to Ψ_2 , show concave-shaped $R_{\Psi_2}(\Delta S)$ distributions which validate CME-driven charge separation. Quantification of the latter signals via the the P -odd Fourier dipole coefficient \tilde{a}_1 , indicate an increase from $\tilde{a}_1 = 0.50 \pm 0.025\%$ in central collisions to $\tilde{a}_1 = 2.0 \pm 0.1\%$ in peripheral collisions, consistent with the expected patterns for a robust but small CME signal.