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Electromagnetic fields in p+Pb collisions

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We study the correlation between the primordial electromagnetic (EM) fields $\vec{E}$ and $\vec{B}$ and the initial matter geometry in p+Pb collisions. The angular correlation between $\vec{B}$ and the second eccentricity harmonic $\vec{\varepsilon}_2$ is substantially diminished in p+Pb compared to heavy ion collisions (HICs), while those between $\vec{E}$ and the first eccentricity harmonic $\vec{\varepsilon}_1$ is of similar magnitude. Unlike in HICs, the EM fields in p+Pb are mainly sourced by the protons in the same nucleus and this results in non-zero angular correlations between the $\vec{E}$ and $\vec{B}$ fields. This gives rise to interesting phenomenological consequences for heavy quark flow and chiral magnetic effects in p+Pb.

List of tracks

Chiral magnetic effect and wave, chiral vortical effect

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