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Magneto-Vortical evolution of QGP in heavy ion collisionS

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The interplay of the magnetic field and thermal vorticity in a relativistic ideal fluid might generate fluid vorticity during the fluid evolution provided the flow fields and the entropy density of the fluid is inhomogeneous. Exploiting this fact and assuming large magnetic Reynolds number we study the evolution of generalised magnetic field ($\hat{B}$) which is defined as a combination of the usual magnetic field ($\vec{B}$) and relativistic thermal vorticity ($\omega^{\mu\nu}$), in a 2(space)+1(time) dimensional isentropic evolution of Quark Gluon Plasma
(QGP) with longitudinal boost invariance. The temporal evolution of $\hat{B}$ is found to be different than $\vec{B}$, and the $\hat{B}$ evolution also depends on the position of the fluid along the beam direction (taken along the z-axis) with respect to the mid-plane $z = 0$.
Further it is observed that the transverse components
($\hat{B_x}$, $\hat{B_y}$) evolve differently around the mid-plane.

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