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Evolution and fluctuations of chiral chemical potential in the heavy ion collisions

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The possible appearance of the effects of local parity breaking in the QCD medium formed in heavy ion collisions can happen due to violation of chiral symmetry, the difference between the average densities of right- and left-handed quarks in the fireball [1]. In the statistical approach, it can be quantified by corresponding chiral chemical potential μ_5 [1,2]. The experimental observables sensitive to the effects of local parity violation in strong interaction include search for polarisation splitting of the ρ^0 and ω^0 mesons via angular dependence of spectral functions in their decay to leptons [3,4]. In this report we estimate the space-time evolution and fluctuations of μ_5 using relativistic hydrodynamics [5] and their effect on the light meson polarization splitting in Pb-Pb collisions at LHC energy.

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