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Measurement of multiplicity asymmetry correlation between positive and negative particles in Au+Au and d+Au collisions by STAR QUAN WANG[1], Purdue University — It has been suggested that metastable domains may form in chiral symmetry restored quark qluon plasma where the parity and time-reversal symmetries are locally violated. Such violation would lead to separation of positive and negative particles by the chiral magnetic effect into the two hemispheres along the system's orbital angular momentum direction. A direct consequence of this separation is a reduction in correlation present in the event between the multiplicity asymmetry of positive particles in the up and down hemispheres separated by the reaction plane (A_+^{UD}) and that of negative particles (A_-^{UD}). Such a reduction can be gauged by comparing the up-down asymmetry correlation ($\langle A_+^{UD} A_-^{UD} \rangle$) to that in the left and right hemispheres separated by the plane perpendicular to the reaction plane ($\langle A_+^{LR} A_-^{LR} \rangle$). The latter is our null-reference because local parity violation does not contribute to this asymmetry correlation. In this talk, we will report results on both $\langle A_+^{UD} A_-^{UD} \rangle$ and $\langle A_+^{LR} A_-^{LR} \rangle$ in Au+Au as well as d+Au collisions at 200 GeV at RHIC by the STAR experiment. The physics implications of our results will be discussed.

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