lisions is smaller than in Au+Au collisions. One reason may be that the multiplicity in Pb+Pb collisions at LHC energy is much larger than in Au+Au collisions at RHIC energy (the $N_{ch}/d\eta$ at mid-rapidity, $|\eta|$ <0.5, is about 600 in 0-10% most central Au+Au collisions at RHIC energy but it is around 1200 in 0-10% most central Pb+Pb collisions at LHC energy [24]). This observation is similar to the report that the elliptic flow parameter v_2 in Pb+Pb collisions at LHC energy is significantly smaller than in Au+Au collisions at RHIC energy [25]. That is attributed to the fact that the hard process is more influential at the LHC energy than RHIC energy in [25]. Whether the competition between the hard and soft processes is also the reason of the FB multiplicity correlation decreasing from RHIC energy to LHC energy is beyond this paper scope, and it would be studied later.

IV. CONCLUSION

We have used a parton and hadron cascade model, PACIAE, to study the centrality dependence of charged particle FB multiplicity correlation strength in 0-10%, 10-20%, 20-30%, 30-40%, and 40-50% central Au+Au collisions at $\sqrt{s_{NN}}$=200 GeV. For the 0-10%, 10-20%, and 20-30% central collisions, the STAR data are well reproduced. The STAR observed characters of (1) b as a function of $\Delta\eta$ is approximately flat for central collisions and (2) b decreases with decreasing centrality are reproduced as well. However the PACIAE results are higher than the STAR data for the 30-40% and 40-50% central collisions and can not obtain b as an exponential function of $\Delta\eta$ for the 40-50% central collisions, especially.

It turned out that the PACIAE model is somewhat better than the wounded nucleon model, the GMC code with a "toy" wounded-nucleon model, or the HSD transport model in comparing with the STAR correlation data. However all the models can not reproduce b as an exponential function of $\Delta\eta$ in the 40-50% central collisions observed by STAR. That should be studied further.

The PACIAE calculations are repeated using the STAR's centrality determination convention mentioned above. The results not improve but even worsens the agreement between theory and experiment. This means STAR's centrality determination convention may be needed for the experimental measurement but not for the theoretical calculations. Because in such theoretical calculations, each definite centrality curve is composed of b calculated at different $\Delta\eta$ with different centrality determination, this kind of curve is not reasonable in theoretical physics.

A prediction for the charged particle FB multiplicity correlation strength in 0-10% Pb+Pb collisions at $\sqrt{s_{NN}}$=5500 GeV is also given. The charged particle FB multiplicity correlation strength in Pb+Pb collisions at LHC energy is much smaller than in Au+Au collisions at RHIC energy. The further study is out of present paper scope and has to be investigated in another paper.

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