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# Λ polarization as a probe for jet thermalization using vorticity induced in the Quark Gluon Plasma

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In high energy heavy ion collisions, a strongly interacting system is formed, called Quark Gluon Plasma (QGP), that behaves similar to a low viscosity fluid in fast expansion. Many experimental results are well described by hydrodynamics models, thus it is to be expected that this medium is also subject to typical hydrodynamic phenomena, like vorticity. Based on this concept, in this work, we have studied the possibility to verify jet thermalization in the QGP through vorticity formation. It is expected that vorticity will generate polarization of particles in the freeze-out, in the jet production plane. So we studied the possibility to use polarization of Λ particles as a measure of the vorticity formed in the medium. The results were obtained by the application of a hybrid chain computer simulation in a event-by-event analysis, where different models were used to describe each stage of a heavy ion collision. In this chain, the initial condition, which characterizes the entropy distribution profile, is generated by the Glauber inspired model, TRENTo; the (3+1)D hydrodynamics evolution is solved by MUSIC; and the particlization is made by the Cooper-Frye inspired model, iSS. To simulate the thermalized jet, we have inserted during the initial stages of the hydro evolution a source with high momentum. We analysed the Λ polarization induced by the insertion of the jet as a function of different parameters, such as the jet position, energy and momentum. Our results show clearly that Λ polarization is an important experimental observable to verify
jet thermalization in the medium.

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