DISSIPATIVE PHENOMENA IN QCD PLASMA STATE CREATED IN HEAVY ION COLLISIONS

DAMIR DEVETAK[1]

[1] *Vinča Institute of Nuclear Sciences, University of Belgrade, Mike Petrovića Alasa 12-14, Vinca 11351, Belgrade, Serbia*
E–mail ddevetak@gmail.com

Abstract. Modern heavy-ion experiments reach collision energies that span the QCD phase diagram in the region of a partonic plasma state called quark-gluon plasma (QGP). The quark-gluon plasma is a strongly-coupled hot medium that lasts only a few fm/c. Being such a ephemeral state of matter the only effective information about QGP is contained in the final particle shower collected by the experiment. Using such high precision experimental data, various observables can be computed for theoretical model comparison. Phenomenologically, the QGP can be treated as a relativistic fluid assuming quick and local thermalization. Plethora of measurements show that the QGP behaves almost a perfect liquid but still contains some dissipative effects to fit the data. In order to study such effects one requires a full theoretical framework of the QGP, which comprises of initial medium conditions, fluid expansion and particle shower (hadronization) phase. Each of these phases affect the predictive power of the model and put a direct quantitative constrain on dissipative contributions when compared to data, see Devetak et al. 2015 and Devetak et al. 2020. In this talk such data to model comparisons are presented, using recent heavy-ion experimental measurements and methods.

References

Devetak D., et al., CMS Collaboration, 2015, *Phys. Rev. C* **92** 034911.
Devetak D., et al., 2020, *JHEP* **06** 044.