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## Transition from Multifragmentation to Flow in Relativistic Nuclear Collisions at CBM energies

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The CBM experiment aims the study of the QCD phase diagram at low temperatures and high baryonic densities, mainly to find out the order of the phase transition between hadrons and partons under these conditions. Between the many predictions about signals to detect the phase transition point: fluctuations [1], hydrodynamics [2], baryon-baryon correlations [3], etc., in our previous studies [4-5] we found as an interesting tool for the analysis of relativistic nuclear collisions: the “nuclear matter jets”. Having a non-partonic origin, the number of jets indicates the centrality of the collision, i.e. the amount of incident energy pumped into the system, and the jet-kinematic and dynamic properties allowed us to make assumptions about their origin. A liquid-gas nuclear phase transition was indicated by the disappearance of jets. At CBM energies, varying the projectile mass, we intend to study the evolution of the number and characteristics of nuclear matter jets when passing from the small projectile (p+Au) whose energy is converted into thermal energy leading to multifragmentation, to a symmetric projectile (Au+Au) when flow is unleashed. For this, we made jetology studies on UrQMD and AMPT simulations (performed at the computing system YaPT from “Nuclear Matter in Extreme Conditions” Research Center – Faculty of Physics, Bucharest University) in the 4-25 A GeV incident energies range. We will extract the usefulness of the “nuclear matter jets” variable for relativistic nuclear collisions.

- [1] M. A. Stephanov, K. Rajagopal and E. Shuryak, Phys. Rev.D 60 (1999) 114028; Phys. Rev. Lett.81 (1998) 4816; V. Koch, arXiv:0810.2520;
- [2] B. I. Abelev et al., STAR Collaboration, Phys. Rev. Lett.102 (2009) 52302;
- [3] A. Mocsy and P. Sorensen, Poster at QM2009;
- [4] C.Besliu et al., Eur. Phys. L. A 1, 65-75 (1998);
- [5] D.Argintaru et al., Indian J. Phys., Vol.85, No.7, pp.1169-1173, July, 2011

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