

The Tsallis-Thermometer as a QGP Indicator For Large And Small Collisional Systems

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Recent experimental results present collectivity also in small systems with high-multiplicity. Today these phenomena are not completely understood: it is an important question whether the presence of the QGP is necessary for the observed collectivity or not. Moreover, the connection between the experimental observables and theories is not trivial. In our phenomenological study we introduce the 'Tsallis-thermometer' as an indicator of quark-gluon plasma, that aims to describe the smooth transition from small to large collisional systems.

The transverse momentum distribution of identified hadrons are analyzed within the thermodynamically consistent formulation of non-extensive statistics. A wide range of center-of-mass energies and average event multiplicities are studied for various hadron species. We demonstrate that the average event multiplicity is a key variable in the study of high-energy collisions. For this purpose the non-extensive statistical approach is more than appropriate.

References

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