

## Methodology of Wavelets in Relativistic Heavy **Ion Collisions in One Dimensional Phase Space** $(\eta$ -Space)

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Abstract

An attempt has been made to apply the wavelet methodology for the study of the results of the chaotic behavior of multiparticle production in relativistic heavy ion collisions. We reviewed the data that describes the collisions of relativistic heavy ion for the case  $\eta$ -space in 1-D phase space of variable. We compared the experimental data and UrQMD data using wavelet coherency. We discussed the results of the comparison.

## **Keywords**

Wavelet Coherence, Morlet Wavelet, Heavy Ion Collisions, Reaction Dynamics, Phase Space, Normalized Factorial Moments

## **1. Introduction**

Particle physics is the science of the fundamental structure of matter. One of the directions of particle physics is the study of high-energy nuclear matter. The interest in the study of high-energy nuclear matter has increased many folds due to the possibility of studying unstable states of nuclear matter under extreme condition of high energy density and high temperature. The study of non-statistical fluctuations in relativistic nuclear collisions has recently also attracted a great deal of attention due to the possibility of extracting important information about the mechanism of multiparticle production in such collisions [1] [2]. The multiplicity of charged particles in high energy nucleus-nucleus interactions is an important parameter which indicates how many particles are produced in that interaction. In the same time the multiplicity distributions of produced particles