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The Angular Power Spectrum of Heavy Ion Collisions

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Particles resultant from heavy ion collisions at $\sqrt{s_{NN}} = 2.76\text{TeV}$ are mapped in a Mollweide type of projection. We decompose the particles' distribution in Spherical Harmonics and finally calculate its angular power spectrum. In practice, detector deficiencies and lack of full pseudorapidity (η) coverage introduce artificial structures to the power spectrum, which are related only to the geometric cuts, i.e. to the η range. We discuss what spectral fluctuations could be caused by the underlying particle distribution and what could come from statistical uncertainties. Furthermore, we explore how the power spectrum modes are possibly related to flow coefficients and how to extract them. We aim to discover which properties of the Quark Gluon Plasma (QGP) can be seen through this type of analysis.

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