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Searching for new physics with Voronoi tessellations

Monday, 14 December 2015 15:00 (1 hour)

High energy experimental data can be viewed as a sampling of
the relevant phase space. We point out that one can apply
Voronoi tessellations in order to understand the underlying
probability distributions governing the relevant phenomena.
Characteristic features embedded in the data can then be
discovered by studying the properties of Voronoi cells.
We particularly focus on detecting kinematic "edges", taking
the examples of two- and three-dimensional data for concreteness.
To this end, we propose algorithms motivated by some analytic
results derived for perfect lattices, and show that the relevant
methods can be further improved with the addition of a few Voronoi
relaxation steps via Lloyd's method.

Presenter: Dr KIM, Doojin

Session Classification: Plenary Session