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**Bayesian Density Estimation with Voronoi Tessellations on Spatial Data** KONSTANTIN MATCHEV, ALEX ROMAN, University of Florida, PRASANTH SHYAMSUNDAR, Fermilab — Relevant information from collision events from the Large Hadron Collider (LHC) and other colliders can be represented as spatial data in the appropriate phase space. Features such as sharp discontinuities in the event number density may signal the presence of new physics. Extraction of features from the data relies upon estimation of the functional value of the underlying distribution. We attempt to use properties of the Voronoi tessellation along with Neural Networks and Bayesian Networks of the data to improve upon traditional methods of density estimation.

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