Texas Tech University - Department of Mathematics and Statistics
Seminar in Applied Mathematics

Local Orthogonal Polynomial Expansion for a Semiparametric Mixture Model

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ABSTRACT. In particle physics, the problem of estimating the rate of a parametrically modeled signal obscured by a poorly understood background is not uncommon. For example, the experimental discovery of the Higgs boson that led to the 2013 Nobel Prize in Physics was based on this type on analysis. I will discuss a possible solution of this problem by using a semiparametric mixture model in which the background density is fitted by local orthogonal polynomials. While a number of principal questions about consistency of this method remain unanswered, it appears to work well in numerical simulations.