THE UNIVERSITY OF CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Convergence of Dümbgen's Algorithm for Estimation of Tail Inflation

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ABSTRACT

Given a density f on the non-negative real line, Dümbgen's algorithm is a routine for finding the (unique) log-convex, non-decreasing function $\hat{\phi}$ such that $\int \hat{\phi}(x)f(x)dx = 1$ and such that the likelihood $\prod_{i=1}^{n} f(x_i)\hat{\phi}(x_i)$ of given data $x_1, \ldots, x_n$ under density $x \mapsto \hat{\phi}(x)f(x)$ is maximized. We summarize Dümbgen's algorithm for finding this MLE $\hat{\phi}$, and we present a novel guarantee of the algorithm's termination and convergence. We also discuss the asymptotic behaviour of the algorithm, and discuss rate of convergence..