OPTIMUM BANDWIDTHS AND KERNELS FOR ESTIMATING CERTAIN DISCONTINUOUS DENSITIES

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(Received August 22, 1990; revised June 21, 1991)

Abstract. Rosenblatt and Parzen proposed a well-known estimator f_n for an unknown density function f, and later Schuster suggested a modification $\hat{f}_n$ to rectify certain drawbacks of f_n. This paper gives the asymptotically optimum bandwidth and kernel for $\hat{f}_n$ under the standard measure of IMSE when f is discontinuous at one or both endpoints of its support. We also consider an alternative definition of the IMSE under which the optimum bandwidths and kernels for f_n and $\hat{f}_n$ are derived. The latter supplement van Eeden's results.

Key words and phrases: Estimation of discontinuous densities, alternative notions of IMSE, modified kernel density estimates, optimal bandwidths, optimal kernels.