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Approximation of a random process with variable smoothness

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We consider the rate of piecewise constant approximation to a locally stationary process X(t),t\in [0,1]\$, having a variable smoothness index $\lambda = 1$, Assuming that $\lambda = 1$, aving a variable smoothness index and satisfies the regularity condition, we propose a method for construction of observation points (composite dilated design) and find an asymptotics for the integrated mean square error, where a piecewise constant approximation X_n is based on $N(n) \le n$ observations of X. Further, we prove that the suggested approximation rate is optimal, and then show how to find an optimal constant.

Subjects: Probability (math.PR)

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