

SEMINÁRIOS

SÉRIES TEMPORAIS, ONDALETAS E DADOS FUNCIONAIS

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WAVELETIZING STATISTICAL PROCEDURES BASED ON FOURIER EXPANSIONS
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In this work we will discuss the use of wavelets in statistical methodologies that are based on Fourier decompositions. We briefly overview methods like classification, estimation based on biased data, additive regression and estimation of conditional densities. We focus on the problem of estimating regression functions of heteroscedastic models of the kind $Y = f(X) + g(X)\epsilon$, where ϵ is independent of X , with mean 0 and variance 1. We will emphasize the estimation of the probability function in mixture regression models. Basically, there is a process Y that can be observed randomly in the time, say T , which is supported on the unit interval. For a fixed time $T = t$, such a process can be either a random variable (r.v.) V with probability $f(t)$ or a r.v. W with probability $1 - f(t)$, where V and W are assumed to have known and different means. We illustrate this method by numerical simulation studies for different probability functions f .

Key words: Wavelet estimation, nonparametric regression, mixture regression.