

On shrinkage rules applied to wavelet coefficients estimation

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Abstract

Shrinkage rules play a central role in modern nonparametric estimation, particularly in wavelet denoising, where noisy coefficients must be attenuated in a way that suppresses noise while preserving significant signal features. A desirable shrinkage rule should be sign preserving, contract small coefficients aggressively, leave large coefficients essentially unchanged, and transition between these regimes smoothly. At the same time, interpretability and theoretical structure are increasingly important, especially when shrinkage rules are used as building blocks for more complex statistical procedures.

We will briefly review the literature on the topic, presenting the speaker's contribution to it and Bayesian estimation of wavelet coefficients, including also a very recent work on a broad family of shrinkage rules, termed SCOPE shrinkage, short for Symmetric CDF Oriented Probability Enhanced shrinkage.