

PATTERN RECOVERY AND SIGNAL DENOISING BY SLOPE WHEN THE DESIGN MATRIX IS ORTHOGONAL*

BY

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Abstract. Sorted ℓ_1 Penalized Estimator (SLOPE) is a relatively new convex regularization method for fitting high-dimensional regression models. SLOPE allows the reduction of the model dimension by shrinking some estimates of the regression coefficients completely to zero or by equating the absolute values of some nonzero estimates of these coefficients. This allows one to identify situations where some of true regression coefficients are equal. In this article we will introduce the SLOPE pattern, i.e., the set of relations between the true regression coefficients, which can be identified by SLOPE. We will also present new results on the strong consistency of SLOPE estimators and on the strong consistency of pattern recovery by SLOPE when the design matrix is orthogonal and illustrate advantages of the SLOPE clustering in the context of high frequency signal denoising.

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THE FULL TEXT IS AVAILABLE HERE

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