Mathematics > Statistics Theory

Approximation properties of certain operator-induced norms on Hilbert spaces

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We consider a class of operator-induced norms, acting as finite-dimensional surrogates to the L2 norm, and study their approximation properties over Hilbert subspaces of L2 . The class includes, as a special case, the usual empirical norm encountered, for example, in the context of nonparametric regression in reproducing kernel Hilbert spaces (RKHS). Our results have implications to the analysis of M-estimators in models based on finite-dimensional linear approximation of functions, and also to some related packing problems.

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