

QUASI-GREEDY BASES AND LEBESGUE-TYPE INEQUALITIES

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Abstract

We study Lebesgue-type inequalities for greedy approximation with respect to quasi-greedy bases. We mostly concentrate on this study in the L_p spaces. The novelty is in obtaining better Lebesgue-type inequalities under extra assumptions on a quasi-greedy basis than known Lebesgue-type inequalities for quasi-greedy bases. We consider uniformly bounded quasi-greedy bases of L_p , $1 < p < \infty$, and prove that for such bases an extra multiplier in the Lebesgue-type inequality can be taken as $C(p) \ln(m+1)$. The known magnitude of the corresponding multiplier for general (no assumption of uniform boundedness) quasi-greedy bases is of order $m^{|\frac{1}{2}-\frac{1}{p}|}$, $p \neq 2$. For uniformly bounded orthonormal quasi-greedy bases we get further improvements replacing $\ln(m+1)$ by $(\ln(m+1))^{1/2}$.