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***Renorming Banach spaces with greedy basis***

A basis of a Banach space is *greedy* if the thresholding greedy algorithm produces best  $m$ -term approximations up to some constant factor. We consider the problem whether this constant factor, called the *greedy constant*, can be improved by renorming the space. Since the algorithm producing the approximants is non-linear, this problem is far from trivial (unlike the problem of improving the basis constant or unconditional basis constant, etc.). We prove that for a large class of bases one can achieve essentially best possible approximations: the greedy constant can be improved to  $1 + \varepsilon$  for any  $\varepsilon > 0$ . Examples include the Haar basis of  $L_p$ ,  $1 < p < \infty$ , or dyadic Hardy space. For general spaces we show that a constant of  $2 + \varepsilon$  can always be achieved for any  $\varepsilon > 0$ . We will also mention open problems.

Joint work with Steve Dilworth, Denka Kutzarova, Ted Odell and Thomas Schlumprecht.