

## AN $\alpha$ -NUMBER CHARACTERIZATION OF $L^p$ SPACES ON UNIFORMLY RECTIFIABLE SETS

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**Abstract:** We give a characterization of  $L^p(\sigma)$  for uniformly rectifiable measures  $\sigma$  using Tolsa's  $\alpha$ -numbers, by showing, for  $1 < p < \infty$  and  $f \in L^p(\sigma)$ , that

$$\|f\|_{L^p(\sigma)} \sim \left\| \left( \int_0^\infty (\alpha_{f\sigma}(x, r) + |f|_{x,r}\alpha_\sigma(x, r))^2 \frac{dr}{r} \right)^{\frac{1}{2}} \right\|_{L^p(\sigma)}.$$

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**Key words:** quantitative rectifiability, uniformly rectifiable sets,  $\alpha$ -numbers,  $L^p$  spaces.