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A Complete Description of the Relative Widths of Sobolev Classes in the Uniform Metric

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Abstract—We consider the width of the Sobolev class of 2π -periodic functions with $||f^{(r)}||_{\infty} \leq 1$ with respect to the set of functions g such that $||g^{(r)}||_{\infty} \leq M$ in the uniform metric $K_n := K_n(W_{\infty}^r, MW_{\infty}^r, L_{\infty})$. We prove a lower bound on K_n for $M = 1 + \varepsilon$ with small ε . This bound together with earlier results completes the analysis of the behavior of K_n .

Keywords: Kolmogorov and relative widths.

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