

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

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Received June 7, 2022; revised August 24, 2022; accepted August 29, 2022

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.

DOI: 10.1134/S0081543822060165

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