

Schütz, Lineia; Ziebell, Juliana S.; Zingano, Janaína P.; Zingano, Paulo R.
Sharp pointwise estimates for functions in the Sobolev spaces $H^s(\mathbb{R}^n)$. (English)

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Summary: We provide the optimal value of the constant $K(n, m)$ in the Gagliardo-Nirenberg supnorm inequality

$$\|u\|_{L^\infty \mathbb{R}^n} \leq K(n, m) \|u\|_{L^2(\mathbb{R}^n)}^{-1 \frac{2}{2m}} \|D^m u\|_{L^2(\mathbb{R}^n)}^{\frac{2}{2m}}, \quad m > n/2,$$

and its generalizations to the Sobolev spaces $H^s(\mathbb{R}^n)$ of arbitrary order $s > n/2$ as well.

MSC:

46E35 Sobolev spaces and other spaces of “smooth” functions, embedding theorems, trace theorems

35A23 Inequalities applied to PDEs involving derivatives, differential and integral operators, or integrals

26D10 Inequalities involving derivatives and differential and integral operators

Cited in **3** Documents

Keywords:

Sobolev embedding property; optimal pointwise inequality; sharp Gagliardo-Nirenberg inequality; optimal Sobolev inequality; optimal constant

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