

Limiting Sobolev inequalities and the 1-biharmonic operator.

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Resumo:

In this talk we present recent results, obtained in collaboration with E. Parini (Univ. Marseille) and B. Ruf (Univ. Milano), on optimal embeddings of the space of functions whose distributional Laplacian belongs to $L^1(\Omega)$, where Ω is a bounded domain. This function space turns out to be strictly larger than the Sobolev space $W^{2,1}$, in which the whole set of second order derivatives is considered. In particular, in the limiting Sobolev case, when $N = 2$, we establish a sharp embedding inequality into the Zygmund space L_{exp} . This result enables us to improve the Brezis-Merle regularity estimate for solutions of Poisson equations with L^1 -data. We then study the operator associated to this problem, the 1-biharmonic operator.