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Sharp Adams-type Inequalities in the Critical Case of Sobolev Spaces with Unbounded Domains of $\mathbb{R}^n$

Fábio Sodré Rocha *

In this talk we will present an extension of the Trudinger-Moser inequality for Sobolev Spaces involving high-order derivatives to unbounded domains of $\mathbb{R}^n$. This inequality is nowadays known as Adams-type inequality. We study the techniques due to Sani and Ruf in [1] and due to Lam and Lu in [2] which are, essentially, combinations of the Comparison Principle of Trombetti and Vázquez for polyharmonic operators and a symmetrization argument, also known as Schwarz Symetrization, aiming to reduce our problem to the radial case and, as a consequence, find an upper bound for the supremum over all functions belonging to the unit ball of $W^{n,\frac{n}{m}}(\mathbb{R}^n)$ provided with some specific norm, as well as the sharpness of the constant that appears in Adams inequalities.

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References

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[2] Lam, N.; Lu, G.: Sharp Adams type inequalities in Sobolev spaces $W^{m,\frac{n}{m}}(Rn)$ for arbitrary integer m. J. Differential Equations 253, 1143-1171 (2012).

*IME, UFG, email: fabiosodremat@gmail.com