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Mês de: Maio 2006

SEMINÁRIOS DE ANÁLISE

Dia 4 de Maio (quinta-feira), às **14h15m**, na Sala B3-01

The shape of extremal functions for Poincaré-Sobolev-type inequalities in a ball

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Abstract: In a joint work with Tobias Weth, we study extremal functions for a family of Poincaré-Sobolev-type inequalities. These functions minimize, for subcritical or critical $p \geq 2$, the quotient $\|\nabla u\|_2/\|u\|_p$ among all $u \in H^1(B) \setminus \{0\}$ with $\int_B u = 0$. Here B is the unit ball in R^N. We show that the minimizers are axially symmetric with respect to a line passing through the origin. We also show that they are strictly monotone in the direction of this line. In particular, they take their maximum and minimum precisely at two antipodal points on the boundary of B. We also prove that, *for p close to* 2, minimizers are antisymmetric with respect to the hyperplane through the origin perpendicular to the symmetry axis, and that, once the symmetry axis is fixed, they are unique (up to multiplication by a constant). In space dimension two, we prove that minimizers are not antisymmetric for large p.

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