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## Optimal Sobolev Imbeddings Involving Rearrangement-Invariant Norms

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Let  $m$  and  $n$  be positive integers with  $n > 1$  and  $m < n$ . We consider Sobolev imbedding inequalities that estimate the size (as measured by a rearrangement-invariant norm) of a smooth function  $u$ , compactly supported in the unit ball of  $n$ -dimensional Euclidean space, by the size (as measured by another such norm) of the total  $m$ -th order gradient of  $u$ . Attention is focused on when such inequalities are optimal. Our results yield best possible refinements of such (limiting) Sobolev inequalities as those of Trudinger and Brezis-Wainger.

This is joint work with Lubos Pick.