

## Optimal constants and domain geometry

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The optimal constants for embeddings of type

$$\|u\|_{W^{1,p}(\Omega)} \leq c(\Omega) \|u\|_{L^q(\Omega)}$$

depend on  $\Omega$ .

Sometimes they are isoperimetric, i.e. among all bounded domains  $\Omega$  of given  $n$ -dimensional volume the minimal  $c(\Omega)$  is attained for the ball, and then the function  $u$ , for which the inequality becomes sharp, is radial.

In my lecture I report on inequalities which lead to elliptic Euler-Lagrange-equations of second and fourth order and focus on the question if

- a) the constants are isoperimetric and
- b) the solutions of the equations are symmetric provided  $\Omega$  is symmetric.