Symmetry of level lines for some degenerate situations

Abstract: In my lecture I will present and apply symmetry tricks to situations, in which the standard tricks do not seem to work. As an example, take a positive solution to a semilinear Dirichlet problem on a domain that looks like the star of David. This solution has full symmetry. Another example will be the minimizer of $\sum_{j=1}^{p} \int_\Omega |\partial v/\partial x_j|^p \; dx$ on $K := \{v \in W_0^{1,p}(\Omega \mid ||v||_{L^p(\Omega)} = 1 \}$. If Ω is a ball, the minimizer is not radially symmetric, but one can still say something about symmetry of the level sets. If Ω is convex, the level sets are convex. The results were obtained jointly with G.Sweers or M.Belloni.

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