Radial positive solutions for supercritical Neumann problems

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We first review very well-known results about symmetry, uniqueness and multiplicity of positive solutions of homogeneous Dirichlet BVPs in a ball or an annulus. We then discuss analogous problems with Neumann boundary conditions and we emphasize the drastic differences and open questions. In particular, we show that the number of positive solutions depends on the growth of the nonlinearity and that there is no threshold on the growth for the existence. We present some recent results based either on bifurcation arguments, topological or variational methods.

References

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