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Infinitely many positive solutions for the Neumann problem involving the p -Laplacian. (English) [Zbl 1046.35030](#)

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Summary: We present two results on existence of infinitely many positive solutions to the Neumann problem

$$\begin{cases} -\Delta_p u + \lambda(x)|u|^{p-2}u = \mu f(x, u) & \text{in } \Omega, \\ \partial u / \partial \nu = 0 & \text{on } \partial \Omega, \end{cases}$$

where $\Omega \subset \mathbb{R}^N$ is a bounded open set with sufficiently smooth boundary $\partial \Omega$, ν is the outer unit normal vector to $\partial \Omega$, $p > 1$, $\mu > 0$, $\lambda \in L^\infty(\Omega)$ with $\text{ess inf}_{x \in \Omega} \lambda(x) > 0$ and $f : \Omega \times \mathbb{R} \rightarrow \mathbb{R}$ is a Carathéodory function. Our results ensure the existence of a sequence of nonzero and nonnegative weak solutions to the above problem.

MSC:

- [35J60](#) Nonlinear elliptic equations
- [35D05](#) Existence of generalized solutions of PDE (MSC2000)
- [47J30](#) Variational methods involving nonlinear operators

Cited in 4 Documents

Keywords:

p -Laplacian; small solutions; positive solutions

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