Quasilinear elliptic problems with general concave-convex nonlinearities

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Abstract

It is established existence and multiplicity of solution for the following class of quasilinear elliptic problems

$$\begin{cases} -\Delta_\Phi u = \lambda a(x)|u|^{q-2}u + |u|^{p-2}u, & x \in \Omega, \\ u = 0, & x \in \partial\Omega, \end{cases}$$

where $\Omega \subset \mathbb{R}^N, N \geq 2$, is a smooth bounded domain, $1 < q < \ell \leq m < p < \ell^*$ and $\Phi : \mathbb{R} \to \mathbb{R}$ is suitable N-function. The main feature here is to determinate whether the Nehari method can be applied finding the largest positive number $\lambda^* > 0$ such that our main problem admits at least two distinct solutions for each $\lambda \in (0, \lambda^*)$.

References

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