

Compactness conditions for p -Laplacian

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We investigate validity of various compactness conditions (e.g. Palais-Smale condition) for the energy functional

$$J_{\lambda_1}(u) = \frac{1}{p} \int_{\Omega} |u'|^p dx - \frac{\lambda_1}{p} \int_{\Omega} |u|^p dx - \int_{\Omega} f u dx$$

for $u \in W_0^{1,p}(\Omega)$, $1 < p < \infty$, where Ω is a bounded interval in \mathbb{R} , $f \in L^\infty(\Omega)$ is a given function and $-\lambda_1 < 0$ is the first eigenvalue of the Dirichlet p -Laplacian Δ_p on $W_0^{1,p}(\Omega)$.

References

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