Journal of Convex Analysis 33 (2026) 629–635

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Stability of the Solutions of Nonlinear Weighted Elliptic Equations Without the Weighted Sobolev Spaces Framework

We prove some stability results on sequences of solutions of weighted elliptic equations such as

$$-\mathrm{div}(s(x)|\nabla u_n|^{p-2}\,\nabla u_n) = f_n(x)\,,$$

under some assumptions on the convergence of the sequence $\{f_n\}$ (either weak or strong in some Lebesgue space). Here $s(x)$ is a positive weight belonging to the Sobolev space $W^{1,p}(\Omega)$.

Keywords: Weighted elliptic equations, stability of solutions, weak and strong convergence.

MSC: 35J15, 35J60, 35J66.