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A remark on uniqueness for quasilinear elliptic equations. (English) [Zbl 0865.35047](#)

Janeczko, Stanisław (ed.) et al., Singularities and differential equations. Proceedings of a symposium, Warsaw, Poland. Warsaw: Polish Academy of Sciences, Inst. of Mathematics, Banach Cent. Publ. 33, 9-18 (1996).

The authors consider the problem

$$-\frac{\partial}{\partial x_i} \left(a(x, u) \frac{\partial u}{\partial x_i} \right) = f \quad \text{in } \Omega, \quad u - g \in H_0^1(\Omega), \quad (1)$$

with Ω a bounded open subset of \mathbb{R}^n , $f \in H^{-1}(\Omega)$, $g \in H^1(\Omega)$, and prove that this problem has a unique solution provided the following conditions hold:

$$|a(x, u) - a(y, u)| \leq C|x - y|, \quad |a(x, u) - a(x, v)| \leq C|u - v| \quad (2)$$

($u, v \in \mathbb{R}$, $x, y \in \Omega$). The uniqueness can fail if (2) fails even if $u \rightarrow a(x, u)$ is Hölder continuous. Counterexamples are given.

For the entire collection see [[Zbl 0840.00028](#)].

Reviewer: [A.Kufner \(Praha\)](#)

MSC:

[35J65](#) Nonlinear boundary value problems for linear elliptic equations

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