

**Ioku, Norisuke****Brezis-Merle type inequality for a weak solution to the  $N$ -Laplace equation in Lorentz-Zygmund spaces.** (English) [Zbl 1240.35209](#)

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Summary: We consider a regularity estimate for a solution of the homogeneous Dirichlet problem for  $N$ -Laplace equations in a bounded domain  $\Omega \subset \mathbb{R}^N$  with external force  $f \in L^1(\Omega)$ . Introducing the generalized Lorentz-Zygmund space, we show the multiple exponential integrability of the Brezis-Merle type for an entropy solution of the Dirichlet problem of the  $N$ -Laplace equation. We also discuss conditions on  $f$  that guarantee the solutions are bounded.

**MSC:**[35J92](#) Quasilinear elliptic equations with  $p$ -Laplacian[35J25](#) Boundary value problems for second-order elliptic equations[35J70](#) Degenerate elliptic equations[46E30](#) Spaces of measurable functions ( $L^p$ -spaces, Orlicz spaces, Köthe function spaces, Lorentz spaces, rearrangement invariant spaces, ideal spaces, etc.)Cited in **3** Documents**Keywords:**Brezis-Merle type inequality;  $N$ -Laplace equation; Lorentz-Zygmund space; Dirichlet problem