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Differentiability for minimizers of anisotropic integrals

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Abstract: We consider a function $u : \Omega \to \mathbb{R}^N$, $\Omega \subset \mathbb{R}^n$, minimizing the integral $\int_\Omega (|D_1 u|^2 + ... + |D_{n-1} u|^2 + |D_n u|^p) dx$, $2(n+1)/(n+3) \leq p < 2$, where $D_i u = \partial u / \partial x_i$, or some more general functional with the same behaviour; we prove the existence of second weak derivatives $D(D_1 u), ..., D(D_{n-1} u) \in L^2$ and $D(D_n u) \in L^p$.

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