Regularity of minimizers
of autonomous convex variational integrals

MENITA CAROZZA, JAN KRISTENSEN AND ANTONIA PASSARELLI DI NAPOLI

Abstract. We establish local higher integrability and differentiability results for minimizers of variational integrals

$$\mathfrak{F}(v, \Omega) = \int_\Omega F(Dv(x)) \, \mathrm{d}x$$

over $\mathrm{W}^{1,p}$-Sobolev mappings $v \colon \Omega \subset \mathbb{R}^n \to \mathbb{R}^N$ satisfying a Dirichlet boundary condition. The integrands F are assumed to be autonomous, convex and of (p, q) growth, but are otherwise not subjected to any further structure conditions, and we consider exponents in the range $1 < p \leq q < p^*$, where p^* denotes the Sobolev conjugate exponent of p.

Mathematics Subject Classification (2010): 49N15 (primary); 49N60, 49N99 (secondary).