

# Homogenization of Periodic Finsler Metrics

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**Abstract:** We prove an homogenization result in  $W^{1,1}$  and in  $BV$  for a sequence  $(F_{\varepsilon})$  of functionals of the form

$$F_{\varepsilon}(u) = \int_0^1 f\left(\frac{u}{\varepsilon}, u'\right) dt$$

where  $\varepsilon$  is a positive parameter which tends to zero,  $f: \mathbb{R}^n \times \mathbb{R}^n \rightarrow [0, +\infty)$  is  $[0,1)^n$ -periodic in the first variable, convex in the second variable and satisfies a suitable growth condition of order one.

Under the additional assumption that  $f(x, \cdot)$  is positively 1-homogeneous, we show how our result is equivalent to the analogous homogenization result (dealt with by Acerbi and Buttazzo) in which growth conditions of order  $p > 1$  are considered.

**Keywords:** Homogenization,  $\Gamma$ -convergence, BV-functions

**Classification (MSC2000):** 49N20, 35B27

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