From p-laplacian to $p(x)$-laplacian

E. Acerbi, G. Mingione

We discuss various regularity results for equations or systems related to the $p(x)$-laplacian operator $-\text{div } |Du|^{p(x)-2}Du$, including elliptic or parabolic systems of the types arising from the theory of electrorheological fluids, and equations of the type

$$-\text{div } |Du|^{p(x)-2}Du = -\text{div } |f|^{p(x)-2}f \ ,$$

where $|f|^{q(x)} \in L^1$ for some function $q > p$, thereby proving higher integrability of Du.