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HIGHER INTEGRABILITY FOR PARABOLIC SYSTEMS WITH NON-STANDARD GROWTH AND DEGENERATE DIFFUSIONS

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Abstract

The aim of this paper is to establish a Meyer's type higher integrability result for weak solutions of possibly degenerate parabolic systems of the type

$$\partial_t u - \operatorname{div} a(x,t,Du) = \operatorname{div}\big(|F|^{p(x,t)-2}F\big).$$

The vector-field a is assumed to fulfill a non-standard $p(x,t)$-growth condition. In particular it is shown that there exists $\varepsilon > 0$ depending only on the structural data such that there holds:

$$|Du|^{p(\cdot)(1+\varepsilon)} \in L^1_{\mathrm{loc}},$$

together with a local estimate for the $p(\cdot)(1+\varepsilon)$-energy.

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