

Higher integrability for doubly nonlinear evolution equations

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In this talk we establish the higher integrability of the spatial gradient of weak solutions to doubly nonlinear evolution equations of the type

$$\partial_t(|u|^{p-2}u) - \operatorname{div}(|Du|^{p-2}Du) = \operatorname{div}(|F|^{p-2}F).$$

We prove that there exists $\epsilon > 0$ such that

$$|F| \in L_{\text{loc}}^{p+\epsilon} \Rightarrow |Du| \in L_{\text{loc}}^{p+\epsilon}.$$