

A metric approach to a class of doubly nonlinear evolution equations and applications

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Abstract. This paper deals with the analysis of a class of doubly nonlinear evolution equations in the framework of a general metric space. We propose for such equations a suitable metric formulation (which in fact extends the notion of *Curve of Maximal Slope* for gradient flows in metric spaces, see [5]), and prove the existence of solutions for the related Cauchy problem by means of an approximation scheme by time discretization. Then, we apply our results to obtain the existence of solutions to abstract doubly nonlinear equations in reflexive Banach spaces. The metric approach is also exploited to analyze a class of evolution equations in L^1 spaces.

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