Renormalized solutions in thermoplasticity

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Abstract

Our study is directed to mathematical analysis of thermoplasticity. This means to problems from the theory of inelastic deformations, in which the temperature affects the inelastic response of the considered material. Homogeneous systems describing thermoplastic deformations possess a natural semi-invariant function, namely the total energy. This function controls the temperature in the space of integrable functions only. Moreover, the heat equation coupled with the balance of forces contains a nonlinear term, which is in general only integrable. From these reasons we are going to define a new solution concept based on the idea of renormalizations.
In this talk I will also introduce the audience to the theory of renormalized solutions for nonlinear elliptic and parabolic equations.

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