Weak solutions for the Norton-Hoff model with full temperature dependence

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Abstract

The presentation deals with the existence of weak solution for a quasi-static evolution of thermo-visco-elastic model with Norton-Hoff law of plasticity. The dependence on temperature occurs both in the elastic constitutive equations (generalised Hooke's law) and in describing the evolution of visco-elastic strain. These thermal effects have not been previously considered. The approximations of the considered models did not allow in literature such a general models. The main idea of proof is the revocation to R. Temam articles on the plasticity from eighties of the previous century and to write down the equations related to the plastic deformations in the same way. For the obtained equations we propose approximations in a flow rule. Thanks to this manner of writing the equations, we show the existence of a weak solution.