

# Entropy solutions in nonlinear thermoelasticity

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## Abstract

Here I will talk about a nonlinear thermoelasticity hyperbolic-parabolic system describing the balance of momentum and energy of a heat-conducting elastic body. An equivalent system is introduced in which the energy balance is replaced with entropy balance. For this system, a concept of weak solution is introduced which satisfies entropy inequality instead of balance and has a positive temperature almost everywhere. In our result, the global existence, consistency and weak-classical uniqueness are shown in the cases where heat energy and heat flux are both linear or nonlinear. This is the first result concerning global existence for large initial data in nonlinear thermoelasticity where the model is in full accordance with the laws of thermodynamics.

This talk is based on a joint work with Boris Muha and Tomasz Cieslak.