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Title: Truesdell's Hauptproblem revisited. On the monotonicity of the Cauchy stress in the logarithmic strain in ideal isotropic hyperelasticity

joint work with

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In this short contribution I will reconsider isotropic hyperelasticity with a view to a priori constitutive requirements (known and new ones) which are needed for a physical plausible response for an ideal elastic material that is never softening.

In doing so I will also discuss the rate-formulation (Truesdell's hypoelasticity) of hyperelasticity involving the Zaremba-Jaumann corotational rate. This allows to motivate a new a priori restriction on the constitutive response involving the logarithmic strain tensor and the Cauchy stress. This may be the basis for a new existence theorem for local equilibrium solutions (work in progress)

References:

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