Gradient flows in metric spaces in applications to solid mechanics

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Abstract

Many problems in continuum mechanics of solids can be (at least formally) written as gradient flows in metric spaces [1]. This indicates a strategy allowing us to show the existence of a solution. Moreover, this approach also suggests a possible numerical approximation to such solutions by means of minimizing movements. We will demonstrate this technique on problems of nonlinear viscoelasticity in Kelvin-Voigt rheology [3, 6] and on a dimension-reduction problem for viscoelastic plates [4]. Theoretical results will be supported by computational examples [5].

References

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