The gradient flow structure of the Maxwell viscoelastic model and a structure-preserving finite element scheme

Hirofumi Notsu[1]

1) *Kanazawa University, Japan*

Corresponding Author: Hirofumi Notsu, notsu@se.kanazawa-u.ac.jp

ABSTRACT

The Maxwell viscoelastic model is studied from mathematical and numerical points of view. We show that the model has a gradient flow structure with respect to a viscoelastic energy. For the computation of the model, we present a P1/P0 finite element scheme, where the scheme has a discrete gradient flow structure and is therefore stable in the sense of energy. Ref. [1] M. Kimura, H. Notsu, Y. Tanaka and H. Yamamoto. The gradient flow structure of an extended Maxwell viscoelastic model and a structure-preserving finite element scheme. arXiv:1802.05566[math.NA], available from https://arxiv.org/pdf/1802.05566.pdf