A RATIONAL APPROACH FOR MODELLING THE MECHANICAL BEHAVIOUR OF MATERIALS EXHIBITING SYMMETRY RELATIONS

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Abstract. A novel and rational approach based on Lie analysis is proposed to investigate the mechanical behaviour of materials exhibiting experimental master curves. This approach provides *a priori* two ways of formulating constitutive laws from data as well as the possibility of predicting new master curves and material charts. The first part of the paper is devoted to the presentation of the algorithm. Afterwards, the strategy is applied to the uniaxial creep and rupture behaviour of a Chrome-Molybdene alloy (9Cr1Mo) at different temperatures and stress levels.

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