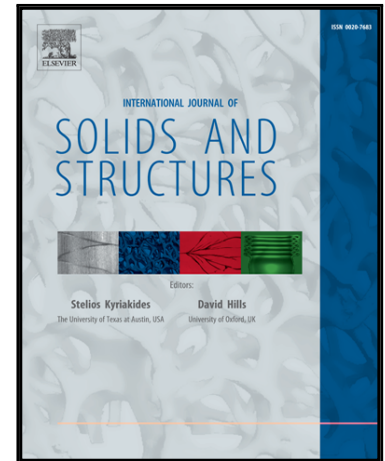


Accepted Manuscript

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Simon P.H. Skovsgaard, Henrik Myhre Jensen

PII: S0020-7683(18)30034-9
DOI: [10.1016/j.ijsolstr.2018.01.032](https://doi.org/10.1016/j.ijsolstr.2018.01.032)
Reference: SAS 9881



To appear in: *International Journal of Solids and Structures*

Received date: 8 August 2017
Revised date: 23 January 2018
Accepted date: 24 January 2018

Please cite this article as: Simon P.H. Skovsgaard, Henrik Myhre Jensen, Three-dimensional constitutive model for elastic-plastic behaviour of fibre-reinforced composites, *International Journal of Solids and Structures* (2018), doi: [10.1016/j.ijsolstr.2018.01.032](https://doi.org/10.1016/j.ijsolstr.2018.01.032)

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Three-dimensional constitutive model for elastic-plastic behaviour of fibre-reinforced composites

Simon P.H. Skovsgaard^{a,*}, Henrik Myhre Jensen^a

^a*Department of Engineering, Aarhus University, Inge Lehmanns Gade 10, 8000 Aarhus C, Denmark*

Abstract

A formulation of a three-dimensional homogenized constitutive model is developed that can predict strain localization in fibre-reinforced composites. A constitutive equation for the model is developed in a general rate form based on independent constituent behaviour which can be either elastic or elastic-plastic. The performance of the constitutive model is investigated by performing an infinite kink band analysis. The development of a kink band is investigated for several initial imperfections and compared with previously published results.

Keywords: Fibre reinforced, Anisotropic, Constitutive laws, Finite deformation, Instability

1. Introduction

The increased use of fibre composites has given rise to a thorough investigation of the behaviour and failure of composites based on several load types. Especially the compressive failure has received attention due to its

*Corresponding author

Email addresses: sphs@eng.au.dk (Simon P.H. Skovsgaard), hmj@eng.au.dk (Henrik Myhre Jensen)

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