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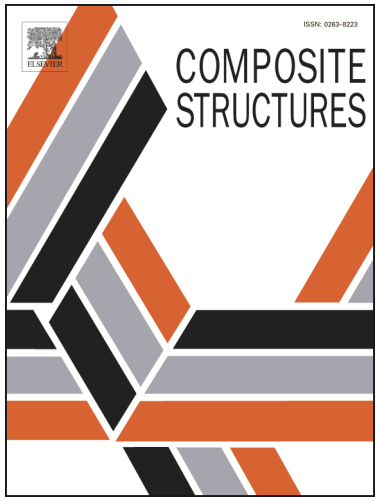

A Simple Mixed Finite Element Model For Laminated Glass Beams

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PII: S0263-8223(17)33087-8
DOI: https://doi.org/10.1016/j.compstruct.2018.03.028
Reference: COST 9475

To appear in: *Composite Structures*

Received Date: 31 August 2017
Revised Date: 25 January 2018
Accepted Date: 12 March 2018

Please cite this article as: Baraldi, D., A Simple Mixed Finite Element Model For Laminated Glass Beams, *Composite Structures* (2018), doi: https://doi.org/10.1016/j.compstruct.2018.03.028

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A SIMPLE MIXED FINITE ELEMENT MODEL FOR LAMINATED GLASS BEAMS

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Abstract

A simple and effective beam finite element model is here proposed for studying the behaviour of elastic laminated glass beams made of two external glass layers connected by a polymeric thin interlayer, able to transmit only shear stresses. The finite element model is based on a mixed variational formulation, which assumes as independent fields the horizontal and vertical translations and transverse section rotations of both glass layers, together with interlayer shear stresses. Several numerical tests are performed showing the effectiveness of the proposed model and its convergence to the well-known upper -monolithic- and lower -layered- limits for a laminated glass beam.

Keywords

A. Glasses; A. Laminates; B. Elasticity; C. Finite element analysis (FEA)

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