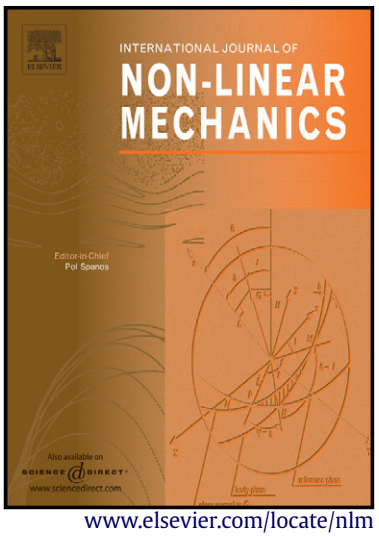

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PII: S0020-7462(14)00053-5
DOI: http://dx.doi.org/10.1016/j.ijnonlinmec.2014.03.001
Reference: NLM2273

To appear in: *International Journal of Non-Linear Mechanics*

Received date: 19 December 2013
Revised date: 2 March 2014
Accepted date: 4 March 2014

Cite this article as: Yeoshua Frostig, NON-LINEAR BEHAVIOR OF A FACE-SHEET DEBONDED SANDWICH PANEL - THERMAL EFFECTS, *International Journal of Non-Linear Mechanics,* http://dx.doi.org/10.1016/j.ijnonlinmec.2014.03.001

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Yeoshua Frostig[1]

ABSTRACT

Geometrical non-linear analyses of a sandwich panel with a prescribed debond within one of the face sheets where the core is either incompressible (stiff) or compressible (compliant) is presented. A loading scheme of thermal or mechanical loads independently or combined thermo-mechanical load is considered. The debond, in one of the face sheets, consists of a through the width crack that divides it into two layers, one with a free surface (upper or lower) and the other attached to the core. The interfaces of the debonded crack is free of shear stresses but can accommodates vertical normal compressive stresses only. In the case of a compliant core the High-Order Sandwich panel (HSAPT) model is adopted and in case of an incompressible core the Ordinary Beam Theory (OBT) and the First-Order Shear Deformable theory (FOSDT) (Equivalent Single Layer, ESL) is used. The mathematical formulation outlines the field equations along with the stress and displacements fields for the cases where the core (stiff or compliant) properties are either temperature independent (*TI*) or dependent (*TD*). The governing equations along with the appropriate boundary and continuity conditions are derived using variational principles following the principles of the HSAPT or ESL models. The non-linear analysis includes geometrical non-linearities in the face sheets caused by rotation of the face cross sections and high-order effects that are the result of

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