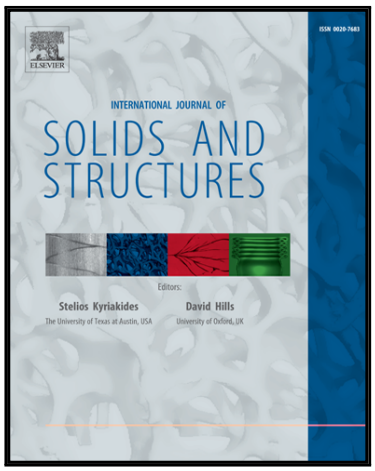

Modeling of interfacial debonding propagation in sandwich panels

Itay Odessa, Yeoshua Frostig, Oded Rabinovitch

PII: S0020-7683(17)30475-4
DOI: 10.1016/j.ijsolstr.2017.10.014
Reference: SAS 9766

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

Received date: 7 June 2017
Revised date: 11 October 2017
Accepted date: 12 October 2017

Please cite this article as: Itay Odessa, Yeoshua Frostig, Oded Rabinovitch, Modeling of interfacial debonding propagation in sandwich panels, *International Journal of Solids and Structures* (2017), doi: 10.1016/j.ijsolstr.2017.10.014

Modeling of interfacial debonding propagation in sandwich panels

Itay Odessa[a], Yeoshua Frostig[b], Oded Rabinovitch[c]

[a] *PhD Student, Faculty of Civil and Environmental Engineering, Technion - Israel Institute of Technology, Haifa 32000, Israel*
[b] *Professor of Structural Engineering, Ashtrom Engineering Company Chair in Civil Engineering, Technion - Israel Institute of Technology, Faculty of Civil and Environmental Engineering, Haifa, 32000, Israel*
[c] *Professor, Abel Wolman Chair in Civil Engineering, Technion - Israel Institute of Technology, Faculty of Civil and Environmental Engineering, Haifa, 32000, Israel*

Abstract

The paper presents a nonlinear model for the analysis of the process of debonding between a face sheet and the core in sandwich panels. The model incorporates the Extended High-Order Sandwich Panel Theory with a cohesive interface modeling of the crack nucleation and propagation at the interface between a face sheet and the core. The derivation of the model combines the first order shear deformation kinematic assumptions for the face sheets with the high order small deformations kinematic assumptions that include out of plane compressibility for the core. The cohesive interfaces combine the components of the sandwich panel together and introduce the nonlinearity and the interfacial failure process into the model by means of nonlinear traction-separation laws. The properties of the cohesive interface are calibrated and the proposed model is validated through comparison with experimental results taken from the literature. Two cases that include

Email address: cvrfros@technion.ac.il (Yeoshua Frostig)