Fibre-bridged fatigue delamination in multidirectional composite laminates

Liaojun Yao, Hao Cui, Yi Sun, Licheng Guo, Xiangming Chen, Meiying Zhao, R.C. Alderliesten

PII: S1359-835X(18)30385-3
DOI: https://doi.org/10.1016/j.compositesa.2018.09.027
Reference: JCOMA 5196

To appear in: *Composites: Part A*

Received Date: 25 April 2018
Revised Date: 23 August 2018
Accepted Date: 27 September 2018

Please cite this article as: Yao, L., Cui, H., Sun, Y., Guo, L., Chen, X., Zhao, M., Alderliesten, R.C., Fibre-bridged fatigue delamination in multidirectional composite laminates, *Composites: Part A* (2018), doi: https://doi.org/10.1016/j.compositesa.2018.09.027

Fibre-bridged fatigue delamination in multidirectional composite laminates

Liaojun Yao[1*], Hao Cui[2*], Yi Sun[1], Licheng Guo[1], Xiangming Chen[3], Meiying Zhao[4], R.C. Alderliesten[5]

[1] Department of Astronautics Science and Mechanics, Harbin Institute of Technology, Harbin, P.R. China

[2] School of Aerospace, Transport and Manufacturing, Cranfield University, United Kingdom

[3] Aircraft Strength Research Institute of China, Xi'an, P.R. China

[4] School of Aeronautics, Northwestern Polytechnical University, Xi'an, P.R. China

[5] Structural Integrity and Composite Group, Faculty of Aerospace Engineering, Delft University of Technology, The Netherlands

* Corresponding author: L.Yao@hit.edu.cn; Hao.Cui@cranfield.ac.uk

Abstract:

The influence of fibre bridging on delamination failure in multidirectional composite laminates with different thickness scales is characterized, and the dependence of fibre bridging significance on laminate thickness as well as loading regime is investigated in this paper. Both quasi-static and fatigue resistance curves (*R*-curve) are experimentally determined to quantify the significance of fibre bridging in delamination growth. The results clearly demonstrate that thickness has effect on the amount of fibre bridging in quasi-static delamination. And the significance of fibre bridging decreases with the increase in laminate thickness. However, the situation for fatigue delamination growth (FDG) is much more complicated. The difference in fibre