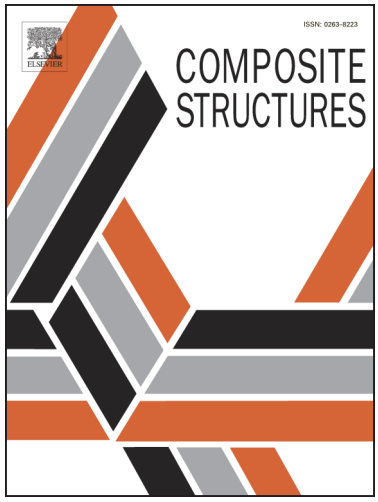

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A methodology to simulate low velocity impact and compression after impact in large composite stiffened panels

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Abstract

Low velocity impact events significantly reduce the mechanical performance of composite structures even though the damage might be barely visible. Numerical simulations can be used to understand and improve the damage resistance and tolerance of composite structures. However, numerical simulations are usually computationally intensive and their application in large composite structures is limited. Furthermore, the numerical models require many parameters that affect their efficiency, accuracy, objectivity and robustness. The present work describes a methodology to simulate low velocity impact and compression after impact which is applied to a composite stiffened panel undergoing visible impact damage. The key definitions are discussed and special attention is devoted to the computational efficiency. The numerical results are compared with experimental data, and the suitability of the proposed methodology is discussed.

Keywords: Low velocity impact, compression after impact, finite element analysis, composite structures

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