Numerical and Experimental Investigation on Composite Joining Techniques

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Abstract.
This work focuses on the study of reliable numerical models for the prediction of the mechanical behavior of composite joints. This study is aimed to better understand the damage initiation and propagation issues in composite joints for an efficient design with reduced over-dimensioning. Different joint typologies (single lap joint, single strap joint, joggle lap joint) and couplings (bonded, bolted, hybrid) have been considered, to identify the best solution, in terms of reliability, for joining composite parts. The numerical models have been validated by means of comparisons with experimental tests. The proposed numerical procedure can be, effectively, used to deeply investigate the mechanical behavior of composite joints.