

Stiffness tailoring of aerospace panels using curvilinear fibers and stringers

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New manufacturing techniques offer the chance of exploring novel structural configurations and concepts.

This is of particular interest for primary load-carrying structures of aerospace vehicles, for which structural efficiency is among main concerns. Increasing attention has been devoted in the past years to stiffness tailoring, which can be achieved by using variable stiffness (VS) laminates, as well as considering curvilinear stiffeners.

In the first part of the presentation, an overview of the state-of-art is provided, illustrating potential benefits of stiffness tailoring with VS laminates and curvilinear stringers. Panels operating in the linear and nonlinear regime are considered. In the second part, analytical and semi-analytical methods are presented for effectively handling the design opportunities offered by these innovative configurations