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OPTIMIZATION OF A SIMPLE AIRCRAFT WING

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A wing-like structure consisting of spars, ribs, reinforcements and skin is optimized considering two cases: (i) weight minimization, and (ii) critical load maximization. The wing carries an elliptically distributed load along the span. Position of spars and ribs as well as dimensions of different parts of the structure are the design variables. Results indicate that significant improvement in terms of objective function has been achieved through the optimization procedures.

KEY-WORDS

Structural optimization, finite elements, aerospace designs, modal and buckling analysis