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Computer Simulation Studies of Aircraft Wing Architectures on Vibration Responses

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Abstract : Vibration is a crucial limiting consideration in the analysis and design of airplane wing structures to avoid disastrous failures due to the propagation of existing cracks in the material. In this paper, we build CAD models of aircraft wings to capture the design intent with configurations. Subsequent FEA vibration analysis is performed to study the natural vibration properties and impulsive responses of the resulting user-defined wing models. This study reveals the variations of the wing's vibration characteristics with respect to changes in its structural configurations. Integrating CAD modelling and FEA vibration analysis enables designers to improve wing architectures for implementing design requirements in the preliminary design stage.

Keywords : aircraft wing, CAD modelling, FEA, vibration analysis
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