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MATLAB-Based Educational Tool for Failure Analysis of Composite Laminates

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Abstract

An educational software has been developed for stress analysis of laminated composites. The software can be used to study both micro- and macro-mechanics analysis of a lamina as well as a laminate. The software can also be used for the failure analysis of laminates, and hence can be useful for the design of composite laminates for given loading conditions. Apart from mechanical loading, the software can also handle hygrothermal loading. Four different failure theories have been used to predict the failure of any given laminate. Graphical user interface (GUI) based on MATLAB language was used to develop this software, thus, making it more user-friendly. Numerous case studies were carried out and validated against the existing literature.

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