Experimental and numerical investigation on mechanical behaviors of woven fabric composites under off-axial loading

Liang Wang , Bo Zhao , Jiayi Wu , Chuanyong Chen , Kun Zhou

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Highlight

- A realistic mesoscale finite element model was developed based on microscopic observation of the woven architecture.
- A combined elastoplastic damage model was developed for precisely modelling mechanical behaviors of the matrix.
- The stiffness and strength reduce dramatically with the increase of off-axial angles.
- Off-axial failures are caused by the combined effects of fiber tow tensile/compression and shear.