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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Detailed methodologies for integrated delamination growth and fiber-matrix damage progression simulation -- Delamination Growth in Composite Plates under Fatigue Loading Conditions -- Influence of intralaminar damage on the delamination crack evolution -- Microdamage modeling in laminates -- Finite element study of delaminations in notched composites -- Effect of the damage extension through the thickness on the calculation of the residual strength of impacted composite laminates -- A Fast Numerical Methodology for Delamination Growth Initiation Simulation -- An Experimental Study on the strength of out of plane loaded composite

structures -- Buckling and collapse tests using advanced measurement systems -- Vacuum infusion manufacturing of CFRP panels with induced delamination -- Lock-in Thermography to detect delamination in Carbon Fibers Reinforced Polymers (Carosena Meola and Giovanni M. Carlomagno).

Sommario/riassunto

This book presents novel methods for the simulation of damage evolution in aerospace composites that will assist in predicting damage onset and growth and thus foster less conservative designs which realize the promised economic benefits of composite materials. The presented integrated numerical/experimental methodologies are capable of taking into account the presence of damage and its evolution in composite structures from the early phases of the design (conceptual design) through to the detailed finite element method analysis and verification phase. The book is based on the GARTEUR Research Project AG-32, which ran from 2007 to 2012, and documents the main results of that project. In addition, the state of the art in European projects on damage evolution in composites is reviewed. While the high specific strength and stiffness of composite materials make them suitable for aerospace structures, their sensitivity to damage means that designing with composites is a challenging task. The new approaches described here will prove invaluable in meeting that challenge.