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Structural Health Monitoring for Life Management of Composite Airframe

Design and maintenance of future airframe composite structures is mainly influenced by the requirement to cope with accidental impact damage. The impact detection and identification strategy for existing structures is of primary importance both in structural health monitoring (SHM) and in non-destructive evaluation (NDE) techniques. Accurately detecting and characterizing an impact event based on sensor data leads us towards condition-based monitoring (CBM), where the subsequent damage can then be detected through active sensing strategies. In this talk, SHM techniques based ultrasonic guided wave will be presented for both passive and active SHM system. Application of these methods to complex stiffened panel will be shown through both experimental measurements and finite element simulations.

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Prior to joining Imperial College in January 2005, he was Professor of Computational Mechanics and the Director of Aerospace Engineering at Queen Mary, University of London (1997 - 2005) and Reader and Head of Damage Tolerance Division at WIT, Southampton (1987 - 1997). During 1984-1987 he was a research fellow at Southampton University. Professor Aliabadi has worked for 25 years in the field of Computational Structural Mechanics and has established an international reputation for his achievements in development of the Computational Methods and, Fracture and Damage Mechanics. His current research interest include structural health monitoring of composite structures; Multiscale modelling of material degradation, fracture and failure; and general development of computational methods for life assessment of metallic and composite structures. He has over 300 journal publications, similar number of conference papers. Ferri Aliabadi is editor in chief of two international journals and a book series and, serves on editorial board of several other international journals. Professor Aliabadi has participated and coordinated several large national and international research projects and continues to work closely with the aerospace sector in UK and Europe