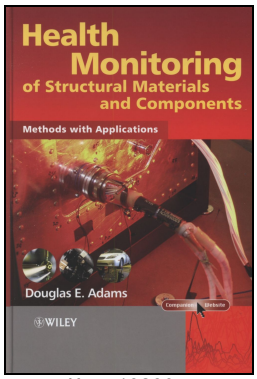

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Health Monitoring of Structural Materials and Components

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This textbook presents a set of methods and applications in three areas of health monitoring for structural materials and components: (1) loads identification, (2) in situ damage identification (diagnostics), and (3) damage and performance prediction (prognostics). The applications focus on using vibration and wave propagation measurements for health monitoring as opposed to electromagnetic, thermal, or other measurement variables that are also indicative of component health.

The book aims to provide readers with a summary of the technical skills and practical understanding required to solve new problems encountered in this emerging field. It is written for newcomers who would like a review of the basics in modeling, measurement, signal processing, and data analysis. The book should also appeal to more experienced readers who are looking for a reference text to address current and future challenges. The book is a manual for conceptualizing, designing, and operating health-monitoring systems for mechanical and structural systems.

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