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Inverse Problems in Experimental Structural Analysis

By Karl H Laermann

Shaker Verlag Jun 2008, 2008. Taschenbuch. Book Condition: Neu. 21x14.8x cm. Neuware - An important field of practical application of experimental mechanics methods is to be seen in structural health monitoring with special regard to existing structures. Such monitoring demands the identification of characteristic structural control parameters like stiffness and compliance in order to justify the actual condition of the object under control. Experimental methods and measurement-systems on high technological level yield the basic information on the state of displacements of structures and their changes during the time of operation and enable the determination of the parameters. This leads inevitably to inverse problems, solution methods of which are presented in the script on hand. After definition of inverse problems in Lecture I different solution methods are theoretically dealt with like matrix inversion methods, iterative algorithms, the methods of successive forward simulation and artificial neural networks. The sensitivity matrix based method is described in greater detail. In Lecture II the application of some solutions is explained more closely with simple examples and different formulation of questions, linear elastic response of material provided. With that difficulties are considered to select an unequivocal solution among from a variety of results. Because different solution...



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