APPLIED VALIDATION

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Probability of Detection: An approach for the reliability assessment of an SHM-System in Civil Engineering

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Abstract:

The transition from periodic maintenance to condition based maintenance in safety-critical sectors is only possible by means of structural health monitoring (SHM) methods. Even though, SHM methods are widely implemented in different industrial sectors, the exploration of its full potential is only possible by the knowledge and understanding of the reliability of these systems.

In the field of NDT, the reliability estimation of testing techniques typically apply the probability of detection (POD) models. The transfer of these models from testing to SHM is not easily applicable due to huge amount of variabilities and complexity of the structures, etc. In those cases, the adoption of POD methods used in NDT techniques are not suitable to obtain the true reliability information for SHM systems. Hence, in the current study, an attempt has been made to develop the SHM based POD models that can be applied to the vibration-based monitoring of civil engineering bridges.

The talk provide a comprehensive introduction to the reliability assessment applied to SHM for interested groups as well as experienced SHM-experts.

Keywords: POD, NDT, SHM, Civil engineering

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