

Title: Damage detection and quantification using transmissibility

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Abstract: Structures experience various types of loads along their lifetime, which can be either static or dynamic and may be associated to phenomena of corrosion and chemical attack, among others. As a consequence, different types of structural damage can be produced; the deteriorated structure may have its capacity affected, leading to excessive vibration problems or even possible failure. It is very important to develop methods that are able to simultaneously detect the existence of damage and to quantify its extent. In this paper the authors propose a method to detect and quantify structural damage, using response transmissibilities measured along the structure. Some numerical simulations are presented and a comparison is made with results using frequency response functions. Experimental tests are also undertaken to validate the proposed technique. (C) 2011 Elsevier Ltd. All rights reserved.

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