



L. Cheng, Z. Su, L. Yu

Evaluation of Structural Damage Using Correlative Sensor Array (CSA)

Издательство DEStech Publications, Lancaster, 2010 год

6 стр; формат: 23,5 x 16 см; библиографический список: 5 единиц
ISBN: 978-1-60595-024-2

Optimal allocation of actuators and sensors in a sensor array or network is a pivotal issue towards development of effective damage identification techniques. This is particularly accentuated for those methods based on elastic waves, in which damage-induced wave components can be masked considerably by multiple wave modes and boundary reflection as a result of inappropriate sensor allocation. An active sensor array comprised of a number of miniaturised piezoelectric wafers aligned strategically was developed, named correlative sensor array (CSA) in this study for its mechanism of using signal correlation processing. A CSA is able to facilitate awareness of structural damage and subsequently locate it by exploring the time difference of wave signals captured by individual array members, with the assistance of an integrated signal processing algorithm. The effectiveness of CSA was numerically and experimentally validated by locating a through-thickness hole in an aluminium plate.

Ключевые слова:

Содержание.

Evaluation of Structural Damage Using Correlative Sensor Array (CSA)