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## Energy-Efficient SHM in Wireless Sensor Networks by Damage Detection from Short Time Series

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A new structural health monitoring (SHM) approach for wireless sensor networks (WSN) is proposed, in which damage detection is performed from short time series applying central data fusion architecture. Damage detection is done using minimum mean square error (MMSE) estimation of each sensor in time domain. The main advantages of the proposed method are: (1) energy consumption is decreased; (2) no data processing or feature extraction is needed in the node; (3) data storage in the node is decreased; and (4) data are not exchanged between nodes. The data must be time synchronized and the amount of training data should be relatively high. The proposed approach is experimentally verified by monitoring a wooden bridge with increasing damage. The required length of the time series for damage detection and the resulting energy saving are discussed.

**Ключевые слова:**

**Содержание.**

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