

## **A Procedure for Post-Earthquake Damage Estimation Based on Detection of High-Frequency Transients**

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**Abstract :** In the current research structural health monitoring is considered for addressing the critical issue of post-earthquake damage detection. A non-standard approach for damage detection via acoustic emission is presented - acoustic emissions are monitored in the low frequency range (up to 120 Hz). Such emissions are termed high-frequency transients. Further a damage indicator defined as the Time-Ratio Damage Indicator is introduced. The indicator relies on time-instance measurements of damage initiation and deformation peaks. Based on the time-instance measurements a procedure for estimation of the maximum drift ratio is proposed. Monitoring data is used from a shaking-table test of a full-scale reinforced concrete bridge pier. Damage of the experimental column is successfully detected and the proposed damage indicator is calculated.

**Keywords :** acoustic emission, damage detection, shaking table test, structural health monitoring

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