Shock and Vibration

Special Issue on
Human-Induced Vibrations of Footbridges

CALL FOR PAPERS

Over the last 20 years, footbridges have become more slender structures due to the improved mechanical characteristics of new construction materials accompanied with demanding aesthetic requirements. As a result, footbridges are increasingly sensitive to dynamic loading induced by human actions and might exhibit excessive vibrations.

Modelling human- and especially crowd-induced loading is a challenging task as it is characterised by a large degree of variability originating from different phenomena. A crowd is composed of unique individuals and thus characterised by a distribution of weights, speeds, step frequencies, and step lengths (interperson variabilities). Even when performing a sequence of nominally identical events, for example, a series of jumps or steps, none of these events will be identical (intraperson variabilities). During footbridge vibrations under crowd loading, passive as well as active human-structure interaction (HSI) effects can occur. Passive HSI is governed by the mechanical interaction between the human body and the supporting structure resulting in modified dynamic characteristics of the coupled system while active HSI indicates the adaptation of pedestrian behaviour to the motion of the supporting surface. Furthermore, humans are intelligent active systems that tend to interact with their neighbours and the group clusters (so-called human-human interaction).

The scope of the special issue is to publish original research papers in the field of human-induced vibrations of footbridges. Papers concerning the assessment of human-induced vibrations and the development and verification of load models will be considered. Contributions to both experimental and numerical modelling of dynamic loading scenarios (including single and multiple pedestrian traffic and runners as well as vandal loading by jumping or bouncing on footbridges) are all welcome as are the studies on human-human and human-structure interactions.

Potential topics include but are not limited to the following:

- Numerical models of human-induced dynamic loads
- Human-human interaction
- Human-structure interaction
- Effects of pedestrian crowds
- Experimental investigations on dynamic properties of footbridges
- Retrofitting interventions to reduce excessive vibrations of footbridges

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/sv/hivf/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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