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VEHICLE-BRIDGE INTERACTION DYNAMICS AND APPLICATIONS

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ABSTRACT

Following presentation of the vehicle-bridge interaction (VBI) element in 1995 [1], the VBI was quickly expanded to the extraction of bridge frequencies from the dynamic response of a moving test vehicle [2]. This technique, known as the vehicle scanning method (VSM), was applied to detection of damping, mode shapes and damages of bridges. It is advantageous in that no vibration sensors need to be mounted on the bridge, but only one or few vibration sensors on the test vehicle. Compared with the conventional direct method that relies fully on the response of the bridge fitted with vibration sensors, the advantage of the VSM is obvious: mobility, economy, and efficiency. Over the past years, a rapidly growing number of research has been conducted along the lines of VSM for bridge measurement, with significant advances made on various applications [3]. In this session, we shall invite all the experts to present their state-of-the-art research on VBI and VSM, and to exchange the ideas for enhancing the relevant techniques for modal identification and damage detection of bridges using the moving vehicles.

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