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# VEHICLE-BRIDGE INTERACTION AND STRUCTURAL DYNAMICS APPLICATIONS

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## ABSTRACT

Following the introduction of the vehicle-bridge interaction (VBI) element in 1995, VBI was rapidly extended to the extraction of bridge frequencies from the dynamic response of a moving test vehicle. This technique, known as the vehicle scanning method (VSM), has been applied to the detection of damping, mode shapes, and damage in bridges. It offers a key advantage in that no vibration sensors need to be mounted on the bridge; instead, only one or a few sensors are required on the test vehicle. Compared with the conventional direct method, which relies entirely on the response of a sensor-instrumented bridge, VSM demonstrates clear advantages in mobility, cost-effectiveness, and efficiency. In recent years, a rapidly growing body of research has been conducted along the lines of VSM for bridge monitoring, leading to significant advances in various applications, including the extraction of bridge modal parameters, the investigation of frequency variation and dynamic coupling, experimental validation, and three-dimensional modeling. In this context, this minisymposium aims to provide a forum for researchers worldwide to present recent developments in vehicle-bridge interaction and its applications in structural health monitoring.

## REFERENCES

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