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Wind Resistance and Health Monitoring of Symmetrical Bridge Structures

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Message from the Guest Editors

The wind resistance and health monitoring of bridge structures are closely related to structural symmetry. Due to the different geometric forms of symmetric and asymmetric bridge structures, the critical wind speed of wind-induced vibration and static wind stability mechanisms are different. The static wind instability of bridge structures is very destructive and there is no warning before static wind instability. Therefore, it is necessary to study the wind resistance of both symmetric and asymmetric bridge structures. In addition, the deformation and internal force distribution of symmetric and asymmetric bridge structures are different. There is a linear mutation in individual positions, which brings difficulty in construction control. Meanwhile, the shrinkage and creep effects of concrete will lead to increased structural secondary internal force and deflection deformation in the later stage of the bridge's useful life, affecting the safety of the bridge structure. Therefore, in order to ensure the safety of symmetric bridge structures during construction and service life, it is necessary to study their health monitoring.



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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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