<<桥梁和结构生命周期性能评估论文集>>

图书基本信息

书名：<<桥梁和结构生命周期性能评估论文集>>

13位ISBN编号：9787030278159

10位ISBN编号：7030278151

出版时间：2010-7

出版时间：科学出版社

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页数：1103

内容概要

Extreme events, aging materials, harsh environments, overweight vehicles, inadequate maintenance, etc. lead to accelerated structural deteriorations of bridges and structures. To mitigate the problem with limited funds, different innovative (advanced) structural repair techniques have been under development and new materials, such as Fiber Reinforced Polymers (FRP), smart/intelligent materials, high performance concrete, and high strength steels are under implementations. The success of such implementations will largely depend on our understanding of bridges/structures performance from during construction to extreme events. This symposium provides a forum for researchers, practicing engineers and structures owners to exchange ideas on improving our understanding of bridge and structure's life-cycle performance. The symposium is featured by 30 invited presentations, which provides more in-depth exchange of information. We also have received many high quality papers from the regular paper submission process. All together 171 full papers are selected from over 220 abstracts for publication in this proceeding. The main scope of the conference focuses on bridge structures, covering the life-cycle performance of bridges, namely from design, to construction, to service, and to extreme events. While the topic of the conference is broad, we intended to make the conference small enough to have more personal interaction for information exchange and development of friendship. We hope this will be an enjoyable meeting and a good experience for us to treasure for years to come.

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章节摘录

The history of signal process has mainly experienced three stages： Fourier transform， wave lettrans form and Hilbert-Huang transform. Although the Fourier transform is valid under extremely general conditions， there are some crucial restrictions of the Fourier spectral analysis： the data must best rictly periodic or stationary； otherwise， the resulting spectrum， especially the negative frequency part of spectrum， will make little physical sense. The other signal processing methods based on Fourier transform， such as Short-Term Fourier trans-form ， Wigner-Ville distribution， suffer all the limitations of the Fourier analysis. As the measured signals， such as wind turbulence and earthquake ground acceleration， manifestnonlinear and non stationary features， their complete characterization may not be accomplished via Fourier transforms， necessitating a new analysis technique in the time-frequency domain. The ad-vent of wavelet transform in 1980s provided an attractive method to analyze nonstationary processwhile wavelet transform is a regional presentation， whose basis function is also priori as it is for Fourier transform， of the data in time-frequency plane and useful for characterizing gradual frequency changes. In 1998， Hilbert-Huang transform （HHT， Huang et al. 1998） was presented and can serve a san innovative signal processing method to analyzeadaptively nonlinear and nonstationary data.