

台湾淡江大学姚忠达教授学术讲座

报告题目: Train-Bridge Interaction Dynamics for High-Speed Rails

报告人: JD Yau(姚忠达)

报告时间: 4月18日下午15:00~16:30

报告地点: 安中大楼A326



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Abstract: Resonance occurs at a dynamic system as the exciting frequency of external forces coincides with any of natural frequencies of the system, which is harmful to the system in operation. In this talk, the mechanisms involved in the dynamic phenomena of train-induced resonance on stationary railway bridges and bridge-induced resonance on moving train cars are conducted. To demonstrate the resonant phenomena for a train car moving on multiple-span bridges, a simplified vehicle-bridge interaction system for a moving oscillator on a simple beam was considered. Analytical results reveal that the *train-induced* resonance on rail-bridges takes place at higher speeds, but the *bridge-induced* resonance on moving train cars at lower speeds. For train-induced resonance problems, the last car of the train will be more seriously excited (than the front cars) by the beams that were continuously excited by the front passing cars. For bridge-induced resonance problems, all the train cars will set in resonance.

Keywords: high speed rail, resonance, vibration

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