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철도 궤도의 동특성 측정 및 건전도 모니터링

Measurement dynamic properties of railways and health monitoring

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Key Words : Periodic structure (주기적 구조물), Dynamic Stiffness (동적 강성), health monitoring(건전도 모니터링), Beam transfer function (보 전달함수법)

ABSTRACT

In order to attenuate structural waves in railway track, damped mass–spring absorber system and spring supported system are considered that are attached continuously along the beam length. A mathematical model is presented for the propagation of structural waves on a finitely long, periodically supported classical beam. The model in this paper could represent a railway track where the beam represents the rail and an appropriately chosen support type represents the pad/sleeper/ballast system of a railway track. And in this study, it is presented that the measurement method of health monitoring of railway track.

후기

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참 고 문 헌

(1) Maria Heckl "Acoustic behavior of a periodically supported Tioshenko beam," Report to the ORE Comittee, C163, September (1991).

(2) Maria Heckl "Coupled waves on a periodically supported Tioshenko beam," Report to the ORE Comittee, C163, September (1992).

(3) D.J. Thompson, "Experimental analysis of wave propagation in railway tracks," Journal of Sound and Vibration 203, 867- 888 (1997).

(4) J. Park, "Transfer function methods to measure dynamic mechanical properties of complex structures," Journal of Sound and Vibration 288, 57-79 (2005).

(5) J. Park, "Transfer function methods to measure dynamic mechanical properties of complex structures," Journal of Sound and Vibration 288, 57-79 (2005).

(6) Junhong Park, Seung Joon Kim, Young Jeong, and Jin Yong Jeon, “Measurements of Viscoelastic Properties of Concrete Structure using Beam Transfer Function Method” 14th International Congress on Sound and Vibration, 9-12 July, 2007

(7) 김승준, 박준홍 “파동전파특성에 기초한 구조 건전도 모니터링”,한국소음진동공학회 2007 춘계학술대회, 10-11 일 5 월 2007 년

(8) J. Park, “Structural Health Monitoring using Flexural Wave Propagation Characteristics," Smart Materials and Structures, submitted for publication.