Shannon 엔트로피 개념을 이용한 가보 웨이블렛 최적 형상의 선정

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The Selection of the Optimal Gabor Wavelet Shape Factor Using the Shannon Entropy Concept

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Key Words : Gabor wavelet transform, Optimal shape factor, Shannon entropy

Abstract : The continuous Gabor wavelet transform (GWT) has been utilized as a useful time-frequency analysis tool to identify the rapidly-varying characteristics of some wave signals. In the application of GWT, it is important to select the Gabor wavelet with the optimal shape factor by which the time-frequency distribution of a signal can be accurately estimated. To find the signal-dependent optimal Gabor wavelet shape factor, the notion of the Shannon entropy which measures the extent of signal energy concentration in the time-frequency plane is employed. To verify the validity of the present entropy-based scheme, we have applied it to the time-frequency analysis of a set of elastic bending wave signals generated by an impact in a solid cylinder.

가진주파수 이동현상을 이용한 저주파 가진기의 개발

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Development of a Low Frequency Vibration Shaker Using Force Frequency Shifting

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Key Words : Force Frequency Shifting, Shaker, Time Varying Damper

Abstract : If a sinusoidal excitation force moves back and forth along a structure with a certain frequency, the structure will be excited with the difference frequency of these two frequencies. A low frequency vibration shaker has been developed using this force frequency shifting without actually moving a shaker. The shaker consists of an ordinary eccentric mass shaker, a plate, constant springs, and time varying dampers. The dampers are turned on and off in a sequential manner to simulate a traveling slide of an excitation force. The operation of the shaker is simulated by solving the equations of motion of the shaker. Characteristics of the shaker have been found and they will be utilized to design efficient low frequency shakers.