

Neural Network Analysis를 이용한 공동주택 바닥충격음의 주관적 라우드니스 예측

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Predicting the subjective loudness of floor impact noise in apartment building using neural network analysis

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Key Words : 바닥충격음(Floor impact sound), 주관적 평가(Subjective response), Neural network analysis.
라우드니스(Loudness), 청감실험(Psychoacoustic experiment)

Abstract : In this research, the relationship between physical measurements and subjective evaluations of floor impact noise in apartment building was quantified by applying the neural network analysis due to its complex and nonlinear characteristics. The neural network analysis was undertaken by setting up L-value, inverse A index, Zwicker parameters and ACF/IACF factors, as input data, which came from the measurements at real suites of apartment building having various sound insulations. The subjective responses from the psychoacoustic experiments were extracted as output data. Then, the reliability of the quantitative prediction for the subjective loudness was evaluated.

바닥충격에 의한 공동주택의 바닥, 벽, 천장의 진동 및 소음방사특성 연구

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Evaluating the Vibrational Characteristics of Floor Impact Noise in Different Structural Elements of an Apartment House

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Key Words : 진동, 소음, 바닥충격음, 공동주택, 음향방사, 고유진동

Abstract : The overall noise reduction was compared in regard to the vibrational characteristics of floor impact noise in a multi story residential building which has several noise reduction treatments. The vibration through its structural elements such as wall, floor and ceiling and sound emitting were investigated for each insulation treatment. It was found that, in case of heavy-weight impact noise, the vibration energy is emitted mostly from ceiling, but for the light-weight impact noise, most of the energy comes through ceiling and walls. That is, the vibration of a ceiling is the main factor that determines the frequency characteristics of the transmitting noise to lower floors.