New Approaches to Analyze Sound Barrier Effectiveness

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Abstract:

Highway noise can cause annoyance, affect sleep patterns, and reduce the property value for people in the proximity. Current methods for analyzing the effectiveness of sound barriers only take loudness into consideration. This paper introduces new methods that can be used to analyze the effectiveness of the sound barriers. Our approach uses psychoacoustic measures including sharpness, roughness, fluctuation, strength, and annoyance. Highway noise is non-stationary, therefore each of these metrics are calculated over a short time. Finally analysis is performed the distribution and change over time. We used nth nearest neighbor algorithm to remove sounds that are not a part of the experiment. In the future, this data can be combined with human surveys to see if the change in sound quality due to the presence of sound barriers has a meaningful impact on people's lives.

Description:

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