Upcoming international standards in psychoacoustics

Besides loudness, other psychoacoustic parameters like tonality and roughness can be used for product noise assessments. Tonality measurement procedures quantify the audibility of prominent tonal components and roughness evaluates modulation characteristics.

In June 2017, two new ISO standards for loudness were published: ISO 532-1 (Zwicker method, based on DIN 45631/A1:2010-03) for stationary and time-varying sounds and ISO 532-2 (Moore/Glasberg method, based on ANSI S3.4-2007) for stationary sounds only. Additionally, ISO TC 43/WG 9 started now to work on ISO 532-3 for time-varying loudness based on the TVL model of Moore/Glasberg.

For many years, tonality measurement procedures such as the Tone-to-Noise Ratio (TNR) and Prominence Ratio (PR) have been applied to identify prominent discrete tones. Recently, a new perceptually-accurate tonality assessment method based on a hearing model of Sottek was developed which evaluates the nonlinear and time-dependent loudness of both tonal and broadband components, separating them via the autocorrelation function. This new perception-model-based procedure, suitable for identifying and ranking tonalities from any sources, is proposed for the next edition of ECMA-74 as an alternative to TNR and PR.

Furthermore, it is planned to extend ECMA-74 by a roughness calculation procedure based on the same hearing model approach together with some post processing (such as a weighted modulation spectral analysis).

The paper gives an overview of recent developments of psychoacoustic standards.

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