

QESTRAL (Part 1): Quality Evaluation of Spatial Transmission and Reproduction using an Artificial Listener

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Abstract

Most current perceptual models for audio quality have so far tended to concentrate on the audibility of distortions and noises that mainly affect the timbre of reproduced sound. The QESTRAL model, however, is specifically designed to take account of distortions in the spatial domain such as changes in source location, width and envelopment. It is not aimed only at codec quality evaluation but at a wider range of spatial distortions that can arise in audio processing and reproduction systems. The model has been calibrated against a large database of listening tests designed to evaluate typical audio processes, comparing spatially degraded multichannel audio material against a reference. Using a range of relevant metrics and a sophisticated multivariate regression model, results are obtained that closely match those obtained in listening tests.

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