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An Approach for Instrumental Quality Evaluation of Car Audio Systems

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The expected sound quality of car audio systems has continually increased in recent years. Systems with particularly high quality for music playback can be found in the luxury class where the audio system is also used as a marketing tool and a unique selling point. No instrumental quality measures which incorporate a perceptually motivated model for the analysis of the complex sound field in the car are available so far for this application scenario.

An important aspect in the assessment of perceived audio quality in such a multi-channel scenario is the evaluation of the spatial properties of the sound field. A human listener is easily capable of judging audio systems with respect to their spatial fidelity even if all other characteristics are similar.

An approach for the quantification of the spatial properties of the sound field is presented in this contribution which is based on a binaural hearing model. Several parameters are derived from a coincidence-based model and evaluated with respect to their perceptual relevance. The evaluation is based on a recently conducted listening test which consists of music recordings that were made in different cars.
