

## **QESTRAL (Part 3): system and metrics for spatial quality prediction**

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### **Abstract**

The QESTRAL project aims to develop an artificial listener for comparing the perceived quality of a spatial audio reproduction against a reference reproduction. This paper presents implementation details for simulating the acoustics of the listening environment and the listener's auditory processing. Acoustical modeling is used to calculate binaural signals and simulated microphone signals at the listening position, from which a number of metrics corresponding to different perceived spatial aspects of the reproduced sound field are calculated. These metrics are designed to describe attributes associated with location, width and envelopment attributes of a spatial sound scene. Each provides a measure of the perceived spatial quality of the impaired reproduction compared to the reference reproduction. As validation, individual metrics from listening test signals are shown to match closely subjective results obtained, and can be used to predict spatial quality for arbitrary signals.

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