

# **An Unintrusive Objective Model for Predicting the Sensation of Envelopment Arising from Surround Sound Recordings**

Sunish George, Slawomir Zielinski, Francis Rumsey, Robert Conetta, Martin Dewhirst, Philip Jackson, David Meares and Søren Bech

## **Abstract**

This paper describes the development of an unintrusive objective model, developed independently as a part of the QESTRAL project, for predicting the sensation of envelopment arising from commercially available 5-channel surround sound recordings. The model was calibrated using subjective scores obtained from listening tests that used a grading scale defined by audible anchors. For predicting subjective scores, a number of features based on Interaural Cross Correlation (IACC), Karhunen-Loeve Transform (KLT) and signal energy levels were extracted from recordings. The ridge regression technique was used to build the objective model and a calibrated model was validated using a listening test scores database obtained from a different group of listeners, stimuli and location. The initial results showed a high correlation between predicted and actual scores obtained from the listening tests.

Convention Paper 7599