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An efficient masking model for audio coding exploiting spectro-temporal masking

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Perceptual audio coding achieves part of its coding efficiency by spectrally shaping the quantization noise such that it is masked by the audio signal to be encoded. In order to determine how much quantization noise is allowed within each frequency band and time interval a masking model is used to predict a masking curve specifying the maximally allowed quantization noise level within each frequency band. In most audio coders only spectral masking properties of the audio signal are used. The model by Dau et al. [J. Acoust. Soc. Am. 99, Vol. 3615, 1996] provides an interesting approach to also model temporal masking. Since this model operates as an artificial observer it only predicts whether the quantization noise is audible or not in the presence of the audio signal. In order to determine the most efficient quantization noise shape, the encoder needs to iteratively adapt the noise shape and evaluate each option with the model. This implies a highly computational complex encoding algorithm. In this contribution we will present an efficient masking model based on the Dau et al. model that only requires a single evaluation of the input signal to determine the maximally allowed noise level within each frequency band.