The complex-valued continuous wavelet transform as a preprocessor for auditory scene analysis

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ABSTRACT

In this chapter we draw links between the widely used gammatone filter auditory model and wavelet theory. From the viewpoint of wavelet theory the benefit from linking these research fields is a fast method for the computation of a time-scale representation. From the viewpoint of auditory filtering the benefits are the existence of methods for the detection of signal singularities and for resynthesis. Our methods has proved to be useful for the analysis of music pieces with a limited spectral overlap of the different signal components. It has been implemented for further research in automated music transcription and auditory source separation, but might also be of interest for sound synthesis systems based on the analysis and transformation of acoustic signals.