

Elektrotechnik-Elektronik-Informationstechnik

# EEI KOLLOQUIUM

## STRUCTURAL SUBBAND DECOMPOSITION: A NEW CONCEPT IN DIGITAL SIGNAL PROCESSING

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**Diskussionsleitung: Prof. Dr.-Ing. A. Kaup**

The M-band polyphase decomposition represents a sequence into a set of sub-sequences where the sub-sequence is called the  $i$ -th polyphase component of  $x[n]$ . The M-band polyphase decomposition of a sequence was advanced to develop computationally efficient interpolators and decimators, and has also been used to design computationally efficient quadrature-mirror filter banks. However, the polyphase components do not exhibit any spectral separation. In this talk, we first review the concept of structural subband decomposition, a generalization of the polyphase decomposition, which decomposes a sequence into a set of sub-sequences with some spectral separation that can be exploited advantageously in many digital signal processing applications. We then outline some of the applications of the structural subband decomposition, such as, efficient design and implementation of FIR digital filters, development of computationally efficient decimators and interpolators, subband adaptive filtering, and fast computation of discrete transforms