13th European
Signal Processing
Conference
September 4-8, 2005
Antalya
Turkey
EUSIPCO 2005

DESIGN OF UNEQUAL–LENGTH LINEAR–PHASE FILTER BANKS WITHOUT REDUNDANCY (WedAmPO2)

✱ Author(s) :

Yuichi Tanaka   (Keio University, Japan)
Akihiro Ochi   (Keio University, Japan)
Masaaki Ikehara   (Keio University, Japan)

✱ Abstract :

In this paper, we present a new structure for linear–phase filter banks without redundancy, which have unequal–length filters at each subband. First, we extend the simplified lattice structure of the linear–phase filter bank to the unequal–length linear–phase paraunitary filter bank. In general, the unequal–length linear–phase paraunitary filter bank has equal–length filters at both the analysis and the synthesis bank because the synthesis bank is a transposed version of the analysis one, while the biorthogonal one does not. So, we discuss the conditions that the linear–phase biorthogonal filter bank has unequal–length filters at 1) the analysis bank, 2) the synthesis bank, and 3) both the analysis and the synthesis banks. Finally, several design and image coding examples are shown.

Menu