SPECIAL LOW–ORDER IIR FILTER BANK DESIGN (WedAmPO2)

Author(s) :

Zhisheng Duan — (Peking University, China)
Jingxin Zhang — (Monash University, Australia)
Cisheng Zhang — (Nanyang Technological University, Singapore)
Edoardo Mosca — (Universita di Firenze, Italy)

Abstract :

The model matching problem ${\bf min}_{R(z)}\|W(z)-R(z)E(z)\|_\infty$ involved in multirate filter banks design is addressed. A method is presented to design the synthesis filter bank $R(z)$ with the order of $W(z)$ which is the polyphase representation of the time delay of the reconstructed signal. The existence conditions of such low–order $R(z)$ are given in linear matrix inequalities (LMIs). The corresponding H_2 model matching problem is solved in the same fashion. The results are illustrated through examples. Examples demonstrate the possibility of improving signal reconstruction error and reducing the order of synthesis filters simultaneously by increasing moderately time delay.

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