



## ANALYSIS BANKS, SYNTHESIS BANKS, LPTV FILTERS: PROPOSITION OF AN EQUIVALENCE DEFINITION APPLICATION TO THE DESIGN OF INVERTIBLE LPTV FILTERS (WedPmPO3)



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★ **Abstract :** Linear Periodical Time Varying (LPTV) filters suffer from a lack of theoretical studies chiefly regarding construction methods of invertible LPTV filters. Conversely, filters banks have received considerable attention because of large applications in digital communications. In this paper, analysis and synthesis banks of Maximally Decimated Filter Banks (MDFB) are separately related to LPTV filters. Thanks to this definition, perfect reconstruction for a MDFB is mathematically related to invertibility of LPTV filters. We then make the most of these results to propose a new class of invertible LPTV filters relying on a lossless matrix. In a spread spectrum framework, lossless property results in no Bit Error Rate degradation when spreading is achieved by lossless LPTV filters.