



## A SYNCHRONIZED LEARNING ALGORITHM FOR NONLINEAR PART IN A LATTICE PREDICTOR BASED ADAPTIVE VOLTERRA FILTER (WedAmPO1)



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★ Abstract : A lattice predictor based adaptive Volterra filter (LP-AVF) is superior to the others with some whitening preprocessing. The LP-AVF has an asynchronous updating problem, which limit convergence property. Updating reflection coefficients of the lattice prediction error filter and an adaptive filter coefficients are not synchronized. A synchronized algorithm has been proposed for a linear model, which can be applied to the linear part of the LP-AVF. However, an asynchronous updating problem for the nonlinear part of the LP-AVF is still remain. In this paper, a new synchronized learning algorithm for the nonlinear part is proposed. An equivalent transfer function is introduced for the nonlinear part. The adaptive filter coefficients are compensated for during a learning process in order to maintain the transfer function to be the same for the next updated reflection coefficients. Simulation results using stationary and nonstationary colored input signals demonstrate efficiency of the proposed method.