Abstracts

Adaptive Deconvolution Using a SAW Storage Correlator

A new analog adaptive filter for deconvolving distorted signals is described in this paper. The filter uses a storage correlator which implements a clipped version of the least mean squared (LMS) algorithm and uses a special iterative technique to achieve fast convergence. The new filter has a potential bandwidth of 100 MHz and would eventually handle pulsed signals of 10-μs width. For signals with time-bandwidth products of less than 100, the adaptation time is less than 1 ms, which allows operation in real time for most applications, including resolution of radar signals in a cluttered environment, removal of echoes from television signals, deconvolution of distorted signals in nondestructive evaluation, and also in telephony. The filter is particularly suited for radar and communications, as it processes signals directly in the VHF range. Two experiments related to ghost suppression of a pulse and to the field of NDE are described in this paper. The results are in good agreement with computer simulations and show a ghost suppression of 15 dB for the first example and a sidelobe suppression of 8 dB for a transducer signal. The adaptation time is less than 450 μs.

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