

On the Equalization of Nonminimum Phase Electroacoustic Systems Using Digital Inverse Filters

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Abstract : Some important electroacoustic systems, like loudspeaker systems, exhibit a nonminimum phase behavior that poses considerable effort when applying advanced digital signal processing techniques, such as linear equalization. In this paper, the position and the number of zeros and poles of the inverse filter, FIR type or IIR type, designed using time domain techniques, are studied, compared and related to the nonminimum phase zeros of system to be equalized. Conclusions about the impact of the position of the system non-minimum phase zeros, on the length/order of the inverse filter and on the delay of the equalized system are outlined as a guide to previously decide which type of filter will be more adequate.

Keywords : loudspeaker systems, nonminimum phase system, FIR and IIR filter, delay

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