Group delay and filter order estimation for least-squares design of IIR filters with unequal number of poles and zeros

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Abstract

A weighted least squares design of IIR filters has been considered in many publications. A problem that remains open is the choice of suitable filter order and suitable group delay of the desired phase response for the given set of filter specifications. This article introduces formulas to determine these parameters. Good results of parameters estimation are achieved for filters with a few poles (outside the origin of the z plane) and an arbitrary number of zeroes. The examples are included in the paper to illustrate how to use the proposed formulas. Copyright © 2008 by Department of Electronics, AGH University of Science and Technology.

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