Analysis of transient multiexponential signals using exponential compensation deconvolution

Authors(s): Abdussamad U Jibia, Momoh-Jimoh E Salami

Abstract

A three-step procedure for the parameter estimation of transient multiexponential signals is proposed. The first step involves the use of the classical Gardner transform to convert the data signal into a convolution model which is deconvolved using exponential compensation deconvolution technique in the second step. In the third step, eigenvector algorithms are used to process the resulting complex exponentials to obtain better estimates of decay rates and number of components. Simulation and experimental results show that this method outperforms previous approaches if a number of preprocessing parameters are correctly selected.