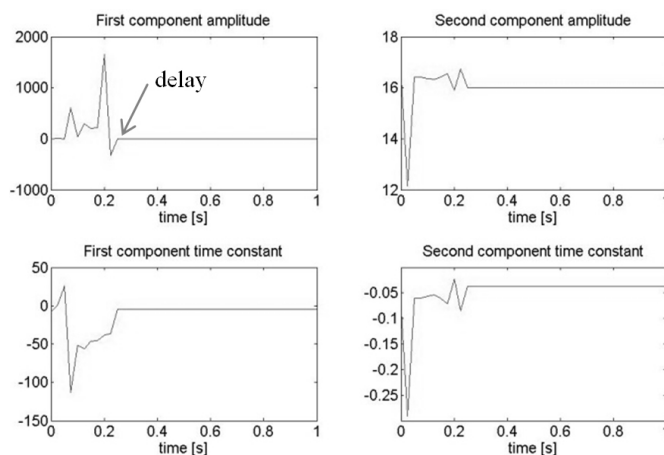


06SP158 Parameter Extraction in Multi Step Exponential SignalD.L. Carni⁴⁶, D. Grimaldi⁴⁶, L. Michaeli⁴⁷, J. Šaliga⁴⁷

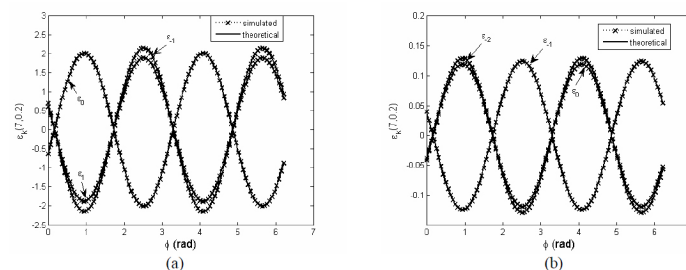
Multi-exponential function is used to model phenomenon or signal in several applications. The parameter extraction of each exponential is based on the assumption that no constant component is part of the signal. In the paper the case of multi step exponential signal with constant component is taken into consideration, and a procedure based on windowing is pointed out to estimate each exponential function in addition to constant component. Preliminary numerical tests assess the correctness of the procedure.



Trend of parameters versus the sliding of the observation window. Delay equal to 0.25 s.

06SP165 Contribution of the Spectral Interference from the Image Component to the Discrete Spectrum of a Sine-WaveDaniel Belega⁴⁸, Dominique Dallet⁴⁹, Dario Petri⁵⁰

It has been shown through computer simulations that the image interference contribution has a sine-wave like behaviour, but its analytical expression has not yet been published in the scientific literature. This is the aim of the paper. The case when a discrete-time sine-wave is weighted by a cosine class window in order to reduce spectral interference is considered. The derived expression is then evaluated for some commonly used windows for DFT samples falling either inside or outside the window main lobe. The accuracies of the derived expressions are verified by means of computer simulations.



Spectral interference contribution from the image component $k(7, 0.2)$ achieved by simulation ('crosses') or theoretical ('continuous line') results versus phase ϕ (rad): (a) two-term MSL window and $k = 1, 0, 1$; (b) three-term MSL window and $k = 2, 1, 0$. Sine-wave amplitude $A = 1$ and number of samples $M = 4096$.