Abstracts

Generation of wideband electromagnetic response through a Laguerre expansion using early time and low frequency data

T.K. Sarkar, J. Koh and M. Salazar-Palma. "Generation of wideband electromagnetic response through a Laguerre expansion using early time and low frequency data." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 1989-1992 vol.3.

The objective of this paper is to generate an ultrawideband and long temporal response for three-dimensional structures. This is accomplished through the use of a hybrid method that involves generation of early time and low frequency information for the electromagnetic structure of interest utilizing available electromagnetic codes. Early time and low frequency data are mutually complementary and contain all the necessary information for an ultrawideband response for a sufficient record length. The time domain response is modeled as a Laguerre series expansion. The frequency domain response is also expressed in an analytic form using the same expansion coefficients used in modeling of the time domain response. The data in both domains are used to solve for the polynomial coefficients in a data fitting procedure. Once these coefficients are known, the available data are simultaneously extrapolated in both domains. This approach is attractive because expansions with a few terms give good extrapolation in both time and frequency domains.

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