Abstracts

Passive model reduction of multiport distributed interconnects

Signal integrity analysis has become imperative for high-speed designs. In this paper, we present a new technique to advance Krylov-space-based passive model-reduction algorithms to include distributed interconnects described by telegrapher's equations. Interconnects can be lossy, coupled, and can include frequency-dependent parameters. In the proposed scheme, transmission-line subnetworks are treated with closed-form stamps obtained using matrix-exponential Pade, where the coefficients describing the model are computed a priori and analytically. In addition, a technique is given to guarantee that the contribution of these stamps to the modified nodal analysis formulation leads to a passive macromodel.

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