Abstracts

Neural space-mapping optimization for EM-based design

M.H. Bakr, J.W. Bandler, M.A. Ismail, J.E. Rayas-Sanchez and Qi-Jun Zhang. "Neural space-mapping optimization for EM-based design." 2000 Transactions on Microwave Theory and Techniques 48.12 (Dec. 2000 [T-MTT] (Special Issue on 2000 International Microwave Symposium)): 2307-2315.

We propose, for the first time, neural space-mapping (NSM) optimization for electromagnetic based design. NSM optimization exploits our space-mapping (SM)-based neuromodeling techniques to efficiently approximate the mapping. A novel procedure that does not require troublesome parameter extraction to predict the next point is proposed. The initial mapping is established by performing upfront fine-model analyses at a reduced number of base points. Coarse-model sensitivities are exploited to select those base points. Huber optimization is used to train, without testing points, simple SM-based neuromodels at each NSM iteration. The technique is illustrated by a high-temperature superconducting quarter-wave parallel coupled-line microstrip filter and a bandstop microstrip filter with quarter-wave resonant open stubs.

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