Lehrstühle und Professuren

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Titel des Beitrags:  
Multi-Radiation Center Transmitter Models for Ray Tracing

Abstract:  
Concepts to improve transmitter models for electromagnetic ray tracing are investigated. The goal is to increase the accuracy of radiated field prediction in the near-field region of the radiator while the ray-based field representation is retained. Basic idea is to divide the radiating structure in smaller parts and treat them as subtransmitters, instead of using only one single transmitter, which is common practice. Not only antenna elements are considered, but also their surroundings, i.e., objects in close proximity such as a carrier platform. In order to generate the subtransmitter models for ray tracing, the current distributions on the radiating structure are computed by an multilevel fast multipole method (MLFMM) integral equation solver and the subtransmitters are directly obtained from the hierarchical multilevel plane wave representation within the MLFMM. Numerical results demonstrate the improved modeling accuracy.

Stichworte:  
antenna elements, antenna theory, carrier platform, current distribution, current distributions, electromagnetic field theory, electromagnetic ray tracing, hierarchical multilevel plane wave representation, integral equations, MLFMM integral equation solver, multilevel fast multipole method, multiradiation center transmitter models, near-field region, radiated field prediction, radiating structure, radiator, radio transmitters, ray tracing, ray-based field representation, subtransmitter models

Zeitschriftentitel:  
IEEE Transactions on Antennas and Propagation