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Titel des Beitrags:
Electromagnetic Field Synthesis by Hierarchical Plane Wave-Based Field Transformation

Abstract:
An optimization-based field synthesis approach is presented that employs a hierarchical plane wave-based field transformation concept for efficient evaluation of the inverse problem forward operator. Irregular transmit antenna array configurations can be used to synthesize a target field distribution in an arbitrarily shaped test volume with full consideration of the antenna element radiation characteristics. For this purpose, a triangular mesh forms the test zone boundary surface on which Rao–Wilton–Glisson (RWG) vector-basis functions perform electric and magnetic field testing. An iterative Krylov subspace solver is employed to solve the ill-posed inverse problem for the transmit antenna coefficients. The effectiveness, accuracy, and efficiency of the proposed field synthesis algorithm are demonstrated for configurations with test zone extents of up to one hundred wavelengths. Moreover, the approach is utilized for antenna measurements, where antenna near-fields are transformed into far-fields.

Stichworte:
Aldehyde Oxidoreductases, Animals, Anticonvulsants, Barbiturates, Brain, Glutethimide, Humans, Hydantoins, In Vitro Techniques, Isoenzymes, Kinetics, NAD, NADP, Rats, Succinimides

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