Abstracts

On the Restricted Validity of Point-Matching Techniques (Dec. 1970 [T-MTT])

The usefulness of point matching when the expansion representing the field diverges in the matching region is discussed in relation to previous work. It is shown that the presence of a metal boundary does not necessarily imply divergence of series representations at the boundary position. The Rayleigh hypothesis, which bears on this, and the extended-boundary-condition method are equivalent only in a restricted sense; the latter is hypersensitive to minute deviations of the field on the reduced boundary and is therefore unsuited to point matching for some shapes. A numerical example is examined in which the use of a divergent series gives little evidence of error from use in the divergent region. Attention is drawn to recent work in which the use of a sutliciently smooth spectral expansion is shown to be able to convert a series of divergent terms into a usable convergent series, permitting valid numerical computations with otherwise divergent representations.

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