# Abstracts

## Analytic Constraints on Electromagnetic Field Computations

*R.H.T. Bates. "Analytic Constraints on Electromagnetic Field Computations." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 605-623.*

It is attempted to provide a defintive statement of the theoretical bases and the computationally useful manifestations of integral equation formulations of field problems, and the expansion of fields in sequences of functions which are proper solutions of the wave equation. The reason for doing this is that it has become clear during the last ten years that sophisticated points of mathematical analysis have practical computational significance. For ease of exposition, only two-dimensional fields are treated in detail. The paper is in five parts. The first part (Sections I and II) is introductory. The second part (Sections III-V) deals with formal diffraction theory. Methods particularly suited to digital computation are presented in the third part (Sections VI-XI). The results of computational experience are assessed in the fourth part (Sections XII-XIV). The fifth part (Sections XV-XVII) discusses the types of investigation needed to increase the technological usefulness of existing techniques.

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