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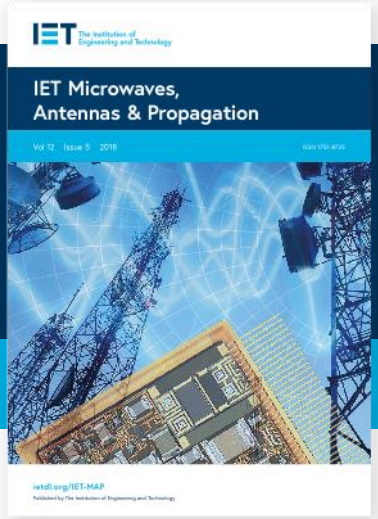

Submission Window Opens: June 2020 |
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Editor-in-Chief: Tim Brown, University of Surrey, UK

Special Issue on:

Method of Analytical Regularisation for New Frontiers of Applied Electromagnetics

The recent advances in nano-optics and photonics, the introduction of novel materials like graphene, and the interest in the development of wireless communications at millimetre-wave and THz-wave frequencies has led to the development of powerful, full-wave general-purpose electromagnetic solvers. Amongst them, a special place is occupied by the integral equation formulations and associated discretisation techniques. This is due to the radiation condition being automatically satisfied and the unknown functions usually being defined on finite supports. The results obtained with commercial software need to be validated ex-post by comparing them with closed form expressions, measurements, or asymptotic solutions because neither the existence of a solution of an arbitrary integral equation, nor the convergence of an arbitrary discretisation scheme can be established a priori. This problem can be completely overcome, however, by use of the Method of Analytical Regularisation (MAR). MAR is a family of methods based on the conversion of the first-kind weakly singular and various strongly singular integral equations, to the second-kind integral or matrix equations for which the Fredholm theory is valid. For these reasons, MAR is attracting a growing interest in the electromagnetic community. This Special Issue focuses on both important fundamental issues of MAR and its novel applications

Fundamental topics of interest include, but are not limited to:

- Regularising Galerkin methods
- Abel integral equation techniques
- Müller boundary integral equations
- Wiener-Hopf based techniques
- Convergence and accuracy
- Eigenvalue problems
- Asymptotics based on MAR

Applications areas of interest include, but are not limited to:

- Optical and microwave antennas
- Plasmonic scatterers
- Patterned graphene
- Metasurfaces
- Dielectric resonators and lenses
- Waveguide circuits
- Laser modes on threshold

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