GUEST EDITORIAL

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Special Issue: The 11th International Symposium on Electric and Magnetic Fields (EMF 2018)

On behalf of the Editorial Board, we are pleased to present a selection of papers related to the 11th International Symposium on Electric and Magnetic Fields (EMF 2018) held in Darmstadt, Germany, on 10-12 April, 2018.

The EMF Symposium series, whose first edition was held in Liège, Belgium, in 1992, aims at building a bridge between recent research advances in mathematical and numerical modelling of electromagnetic fields and the growing number of industrial problems requiring such techniques. The 11th edition was organized by the Institute for Accelerator Science and Electromagnetic Fields and the Centre for Computational Engineering of the Technische Universität Darmstadt, and attracted 95 participants from 19 countries.

Among the 84 presentations in the symposium program, 31 manuscripts were submitted for peer review. Fourteen papers were selected for publication in this special issue of the International Journal of Numerical Modelling: Electronic Networks, Devices and Fields. The high scientific and technical quality of the Symposium is well reflected in the quality of the manuscripts contained in this special issue.

Four broad topics were covered during the 11th edition of the symposium.

The first major topic considers the mathematical modelling of electromagnetic problems in view of their eventual numerical solution on computers, with contributions on the coupling of finite element and multipole methods,[1] boundary element methods,[2] inversion methods[3] and electromagnetic transformation laws.[4] The second major topic treats the numerical modelling of the electromagnetic behaviour of electric and magnetic materials, with contributions on the modelling of magnetoelectric composites[5] and magnetic hysteresis.[6,7] The third major topic concerns homogenization and reduced order models, with contributions to the time-domain homogenization of windings,[8] extraction of capacitance matrices[9] and lumped element modelling.[10] The fourth major topic concerns application-specific numerical techniques, with contributions to the modelling of synchronous reluctance machines,[11] graded surge arresters,[12] high voltage power cables[13] and DC-AC power converters.[14]

We express our gratitude to all the members of the EMF scientific committee—P. Alotto, J.P.A. Bastos, O. Biro, M. Clemens, S. Clenet, W.A. Cronje, A. Demenko, L. Dupré, J. Gyselinck, K. Hameyer, L. Kettunen, A. Kost, L. Krähenbühl, V. Mazauric, J. Melkebeek, G. Meunier, A. Nicolet, M. Petrun, A. Razek, M. Repetto, G. Rubinacci, R. Sabariego, J.K. Sykulski and M. Trlep—as well as to all the reviewers, who provided the necessary volunteer time and expertise to conduct a fair and detailed review, ensuring high publication standards for the selected manuscripts.

We also want to thank the staff from the *Association des Ingénieurs de Montefiore* (AIM), and especially C. Dizier, for their help organizing the EMF symposium series: the next edition will be held in Marseille, France, in July 2021.

Finally, we would also like to thank all the editorial staff of the International Journal of Numerical Modelling: Electronic Networks, Devices and Fields for their kind support during the whole process of preparation of this special issue.

We hope you will enjoy reading this selection of articles.

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