

Introduction

The origin of OIPE, the International Workshop on Optimization and Inverse Problems in Electromagnetism, dates back to the year 1989 in Pavia, Italy. Since then, 14 biennial meetings have been held across Europe, demonstrating the strategic importance of optimization and inverse problems in electromagnetic research. OIPE has established itself as an interdisciplinary forum, where experts from the fields of engineering, mathematics, physics and computer science with academic and industrial backgrounds discuss theoretical aspects, innovative algorithms, software methodologies and latest applications in a broad range of engineering fields.

The 15th edition of this biennial meeting, OIPE 2018, was held at UMIT – Private University for Health Sciences, Medical Informatics and Technology in Hall in Tyrol, Austria, from September 11th to 13th. The Workshop was organized by the Institute of Electrical and Biomedical Engineering in cooperation with the Department of Mechatronics and the Department of Mathematics, both of the University of Innsbruck.

One focus of this edition of OIPE was theoretical aspects and fundamentals including the formulation of inverse problems and design problems, model order reduction, sensitivity analysis and regularization techniques. Emphasis was also put on novel optimization algorithms. Furthermore, applications in the fields of transportation, non-destructive evaluation, smart grids, electrical machines and biomedical engineering were presented. Finally, a special session within the program was devoted to the emerging field of computational electromagnetism.

For OIPE 2018, more than 100 digests from Europe, America, Asia and Africa were submitted. Of those, about 80 contributions were selected to be presented within 8 oral sessions and 3 poster sessions. Special attention was paid to contributions of young researchers, with the two best contributions receiving the *IET SMT award for the best paper presented by a young researcher*.

All authors of contributions presented at the Workshop were invited to submit full paper manuscripts for possible publication in a scientific journal. After a thorough review process strictly following the process applied to regular submissions, 15 papers were accepted for this special issue of IJAEM, the Journal of Applied Electromagnetics and Mechanics. This collection nicely reflects the broad range of topics discussed during the Workshop.

I am particularly grateful to the OIPE International Steering Committee (ISC) and the Technical Committee for its support during the organization. I would like to give special thanks to all the reviewers, including the members of the OIPE ISC, and to all session chairs for their valuable efforts. The support from IET and the Hall-Wattens Tourist Board is highly appreciated. Finally, I would like to thank the local organizing committee for their tremendous effort before, during and after OIPE 2018.

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