
FOREWORD

Special Section on Recent Advances in Simulation Techniques and Their Applications for Electronics

Generative AI, big data, IoT, DoT, 6G, cloud computing, etc., the speed of growth and diversification of electronics technologies is gaining momentum, and borderless business competition is becoming fierce. Simulation in the electronics field is becoming increasingly important against the backdrop of such global competition, and simulation for actual product design must address how to expand the scope of verification and how to enable high-speed, high-precision analysis. Expectations for multi-physics analysis that handles diverse physical phenomena are also only rising.

This special section arranged by the technical committee on Electronics Simulation Technology (EST) is published every other year, and this will be the sixth publication. The section has one invited paper, five papers and five brief papers which were accepted through rigorous peer review. The invited paper discusses a spectrum reconstruction method which will be very effective for the high-resolution multispectral CMOS image sensors. The topics of regular and brief papers are as follows: 3D full vectorial finite element bidirectional beam propagation method, finite element beam propagation method with coordinate transformation, convergence properties of the domain decomposition method, a precise design method of high-order bandpass filters, a cost-effective circularly polarized horn antenna, a computational approach for transient analysis of extensive scattering problems, transient analysis technique to analyze the multi-layered dispersive media, numerical dispersion property for the finite-difference time-domain method, an augmentation method for ground penetrating radar image, heart rate control system for real-time heart rate prediction. I hope you enjoy the actual papers in this special section.

Finally, I would like to appreciate all the authors for their contributions, the reviewers for their cooperation in reviewing the papers, the members of the editorial board for their efforts in planning and editing, and the secretariat for their support in publishing this special issue. I hope this special issue will be practically valuable for the further development in industry and academia.

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Masayuki Kimishima (*Member*) received the B.E. degree in Electrical Engineering from Niigata University, Niigata, Japan, in 1984. In the same year, he joined Tokyo Keiki Inc., where he was involved in the development of broadband microwave circuits for aerodefense systems. In 1994, he joined New Japan Radio Corporation, where he has worked on the development of MMICs for mobile communications. In 1998, he moved to Advantest Corporation, where he has been engaged in the development of microwave and millimeter-wave MMIC for measurement instruments, and automated test equipment. In 2018, he became representative director and president of Advantest Laboratories Ltd. He received ATE Vision Best ATE Paper Award in 2010. In 2013 he received Ph. D from Utsunomiya University. He is a member of the IEEE.

