
FOREWORD

Special Section on Progress & Trend of Superconductor-based Computers

It is our great pleasure to have a Special Section entitled “Progress & Trend of Superconductor-based Computers” in IEICE Transactions on Electronics. Superconducting devices based on Josephson junctions exhibit low power consumption and fast switching. Superconducting transmission lines are free of dispersion up to several hundred GHz. Unique logic circuits such as fast single flux quantum (SFQ) circuits and ultralow power adiabatic quantum-flux parametron (AQFP) logic circuits were proposed and have been improved. These circuits have been well developed based on not only their theoretical advantage but also reliable design and fabrication technology of superconducting integrated circuits. Recently, strong interest on quantum computing motivates the development of superconducting quantum-bits, control and readout circuits, and their integration. In this Special Section, seven invited papers and a contributed one describe these topics: two papers for SFQ, four for AQFP, and two for key devices for quantum circuits. Finally, I would like to appreciate activities of all authors, reviewers, and members in editorial committee for completing this special section.

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Satoshi Kohjiro (*Member*) received the B.E., the M.E., and the D.E. degrees in electronics from Kyushu University in 1984, 1986, and 1989, respectively. In 1989, he joined the Electrotechnical Laboratory, presently the National Institute of Advanced Industrial Science & Technology (AIST), where he has been working on the development of analog superconductor devices such as SQUIDs, oscillators, and detectors. From 2018 to March 2022, he was a Principal Research Manager of Device Technology Research Institute, AIST. During this period, his research interest was the multiplexing readout of detector array and its application to both basic and industrial sciences.

