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Superconducting Digital Electronics -Present and Future-

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Superconducting digital application is one of the most important fields to be developed in the field of superconducting electronics. Superconducting digital systems operated with high speeds and extremely low power consumption will open up a new technology which can cope with growing demands in information processings in the future information society. Digital circuits based on single flux quantum(SFQ) can be operated at clock frequencies up to 100GHz, providing us extremely high throughput of more than Tbps in signal processings. This unique capability of SFQ logic circuits has a possibility to realize new digital applications in the future digital society.

In order to get SFQ digital systems into the real world, many kinds of technologies such as developments of new logic architectures, design technology, LSI processes base on LTS and HTS and so on are remained to be developed. The most important thing is to find suitable applications for SFQ technology.

In this paper, the present status of superconducting digital technology centered on Japanese activities and the future direction of development including possible applications will be discussed..

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