

# Demonstration of Signal Transmission Between Adiabatic Quantum-Flux-Parametrons and Rapid Single-Flux-Quantum Circuits Using Superconductive Microstrip Lines

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**Abstract**—We have been investigating interface circuits between rapid single-flux-quantum (RSFQ) circuits and adiabatic quantum-flux-parametron (AQFP) circuits for use in high-speed, low-power hybrid computing system. These interface circuits also enable us to use long-distance interconnections between AQFP gates. In this study, we fabricated and demonstrated AQFP circuits, including long interconnections of passive transmission lines (PTLs), in which the interface circuits were used to convert the signal currents of the AQFP gates into single-flux-quantum (SFQ) pulses traveling along PTLs. The length of each PTL was approximately 4.3 mm. During low-speed measurements, correct operations with wide bias margins were confirmed.

**Keywords (Index Terms)**—RSFQ, AQFP, passive transmission line, microstrip, interface, superconducting integrated circuit.

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