



A 1:128 multiplexing rate Time Domain SQUID Multiplexer

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A cryogenic Time Domain Multiplexer (TDM) has been developed for the readout of kilo-pixel Transition Edge Sensors (TES) arrays dedicated to the QUBIC (Q&U Bolometric Interferometer for Cosmology); instrument which aims to measure the B-mode polarization of the Cosmic Microwave Background. Superconducting QUantum Interference Devices (SQUID) are usually used to readout TESs. Moreover, SQUID allows to investigate TDM by biasing sequentially SQUIDs connected together - one for each TES. In addition to this common technique allowing to reach a typical 1:32 multiplexing rate, a cryogenic integrated circuit provides a second multiplexing stage. This integrated circuit is one of the original part of our TDM which allows us to reach an unprecedented 1:128 multiplexing rate. We will present this 2 TDM stages : topology of the SQUID multiplexer, operation of the cryogenic integrated circuit, and integration of the full system to readout a TES array.