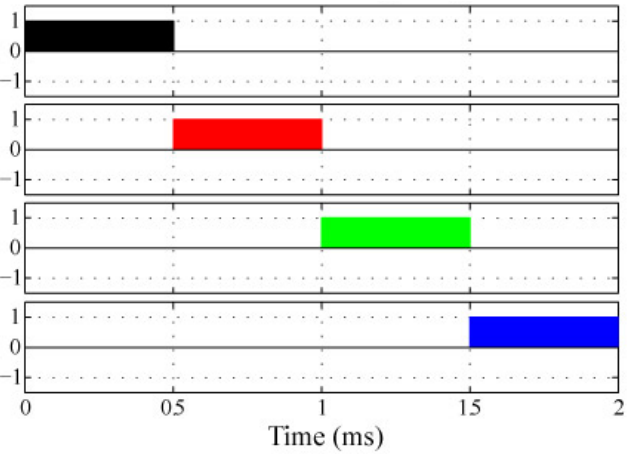
Different ways to multiplex: TDM, FDM, and CDM

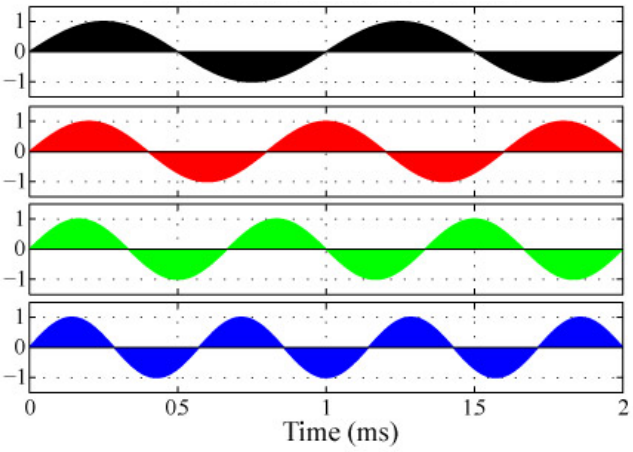
Time-division MUX



Define time band by turning on SQUIDs sequentially

DC-biased TESs

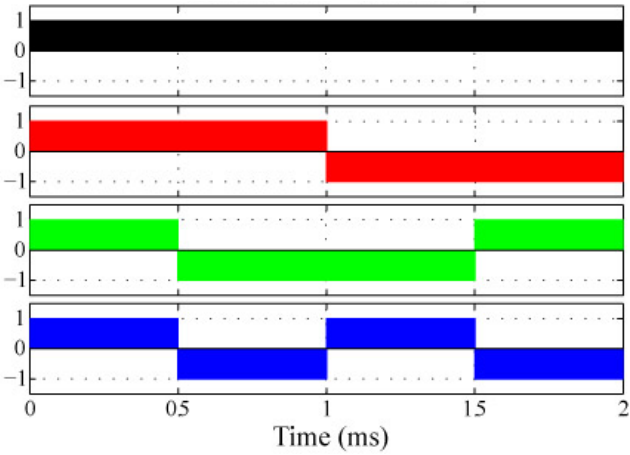
Frequency-division MUX



Define frequency bands with passive resonator circuits

AC or DC-biased TESs

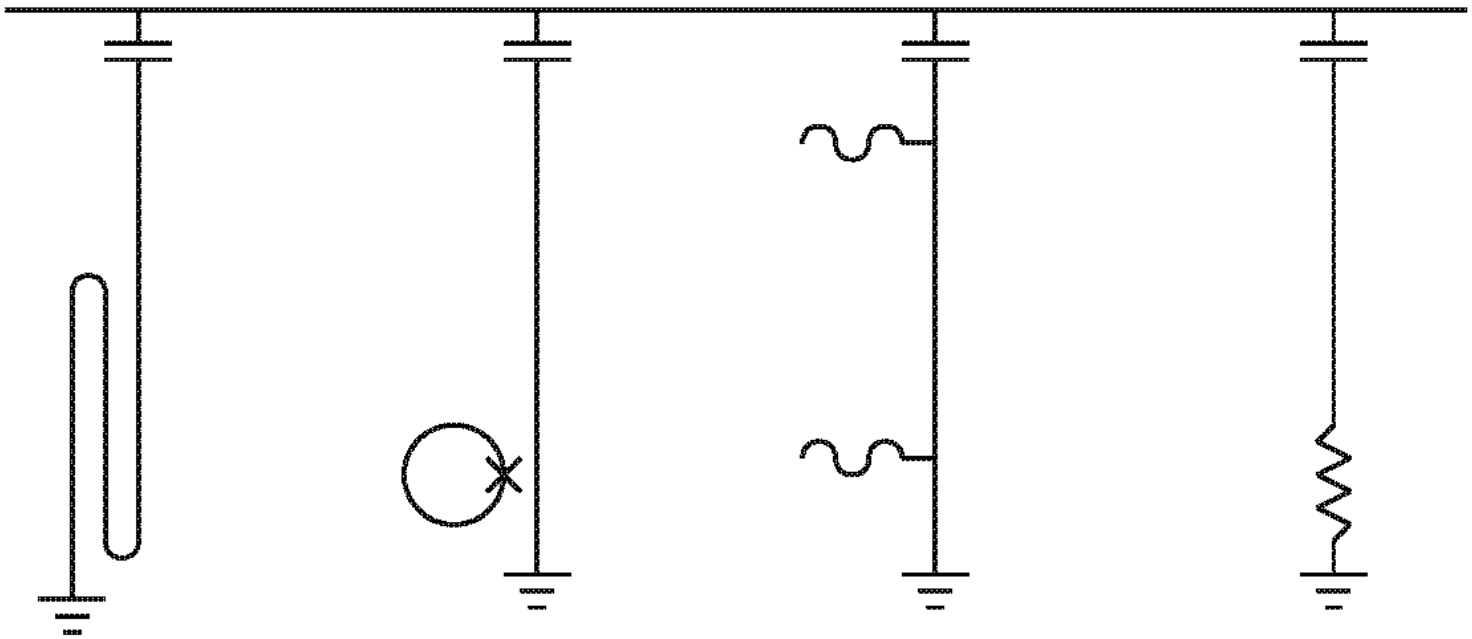
Code-division MUX



Define Walsh code by modulating polarity of detector coupling

DC-biased TESs

Four approaches to microwave resonator readout



MKID
- Direct photon absorption
- Variable Q and f

Microwave SQUID
- TES
- Current modulates inductance of Josephson Junction
- Varable f

KPUP
- TES
- Current modulates kinetic inductance of resonator
- Varable f

Direct TES readout
- TES
- Variable Q