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## FREQUENCY-DOMAIN-MULTIPLEXED READ-OUT OF EURECA

abstract: EURECA (EUROPEAN Calorimeter Array) is a European-Japanese project that aims to demonstrate technical readiness for a Transition-Edge-Sensor (TES) based X-ray imaging Spectrometer on ESA's XEUS observatory. EURECA comprises a 5 x 5 pixel TES micro-calorimeter array with an energy resolution aim of 1 - 2 eV for the 0.1 - 3 keV energy range. The small array will be read out by four SQUID-channels using frequency-domain-multiplexing (FDM).

Future application of TES-based bolometers and micro-calorimeters for infrared, sub-mm, and X-ray astronomy require the use of large imaging arrays with unprecedented sensitivity and energy resolution. The read-out of arrays as large as 100 x 100 pixels requires development of multiplexed read-out electronics. Multiplexed read-out electronics reduces the heat load onto the cryostat, the complexity of the interconnecting harness, and the number of active electronics components, like amplifiers, at cryogenic temperature.