A Parallel/Series Array of Cold-Electron Bolometers with SIN Tunnel Junctions for Cosmology Instruments

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Abstract - A novel concept of the parallel/series array of Cold-Electron Bolometers (CEB) with Superconductor-Insulator-Normal (SIN) Tunnel Junctions has been proposed for matching with JFET readout. The current-biased CEBs are connected in series for DC and in parallel for HF signal. A signal is concentrated to the absorber through the capacitance of tunnel junctions and additional capacitance for coupling of superconducting islands. Due to dividing power between CEBs in the array and increasing responsivity, the noise matching could be effectively optimized and the photon Noise Equivalent Power could be easily achieved at 300 mK with a room temperature JFET readout.

Manuscript received Nov. 28, 2007; accepted January 11, 2008. Reference No. ST23, Category 4.
Based on paper submitted to Proceedings of EUCAS 2007; published in JPCS 98 (2008), paper # 012310