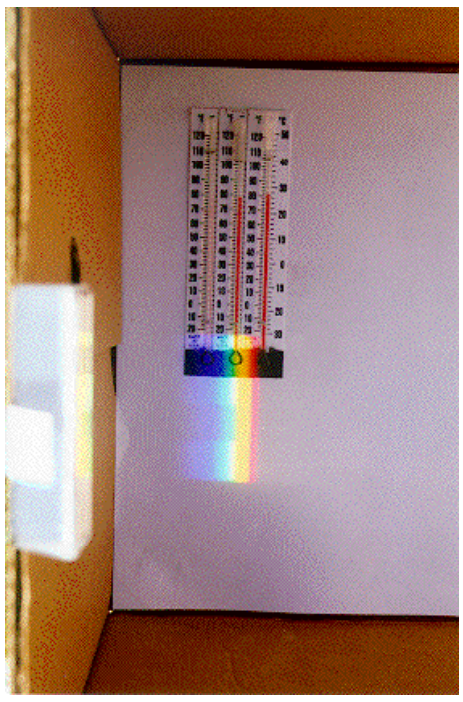
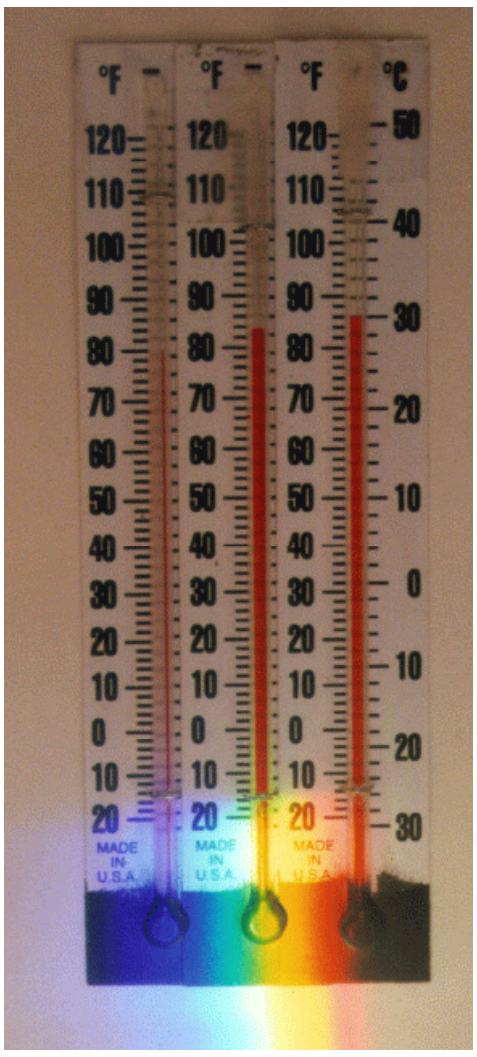




Wm. Herschel finds “caloric rays” in 1800, discovering that the spectrum extends into the infrared (and maybe beyond!)

Langley invents the electrical bolometer in 1878

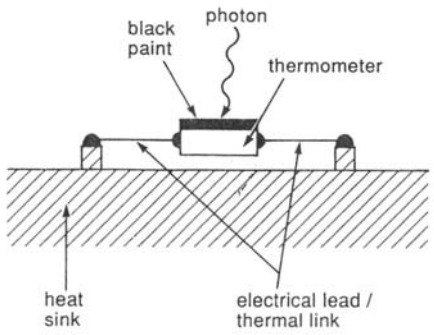
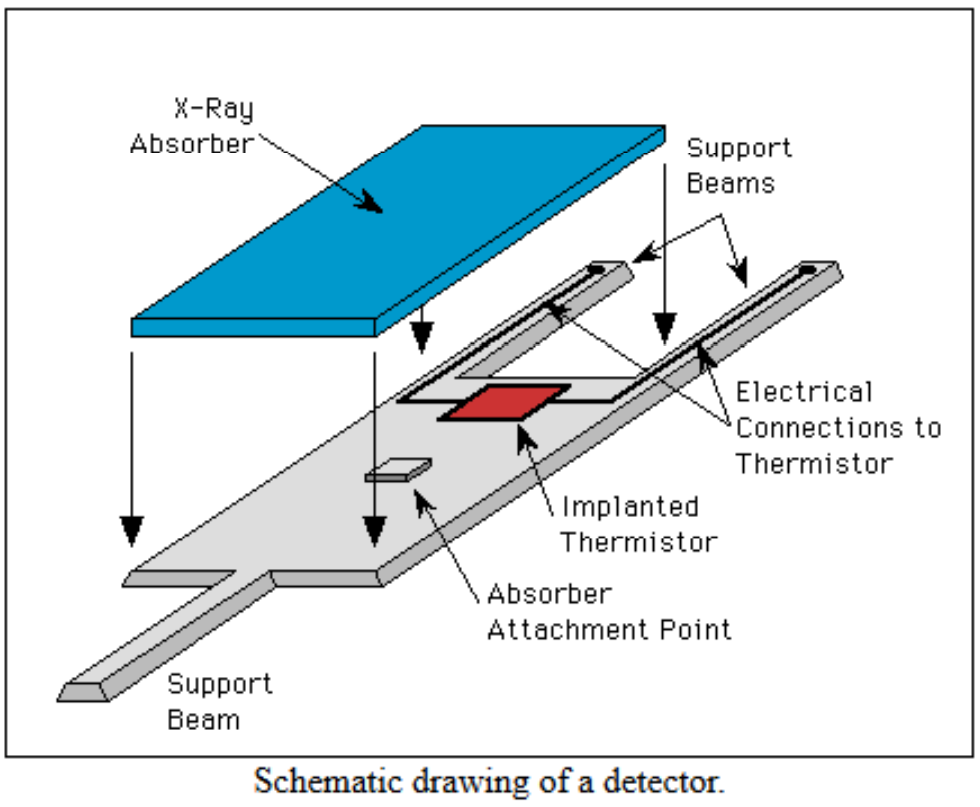


Figure 9.2. Simple bolometer.

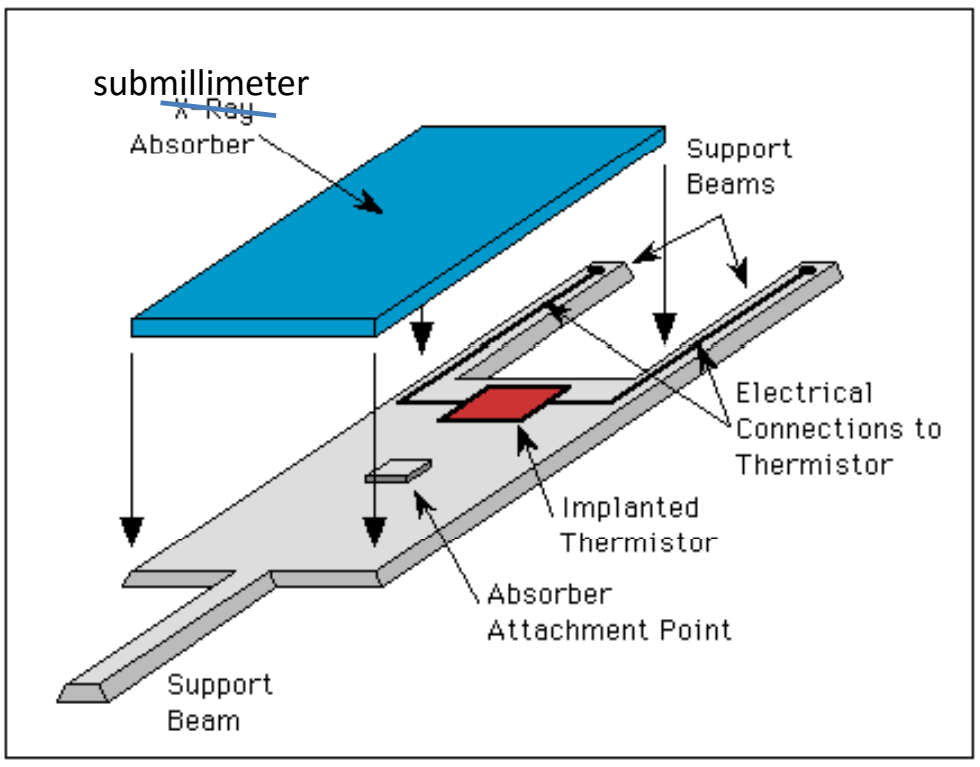
X-ray microcalorimeter



Schematic drawing of a detector.

GSFC microcalorimeter lab

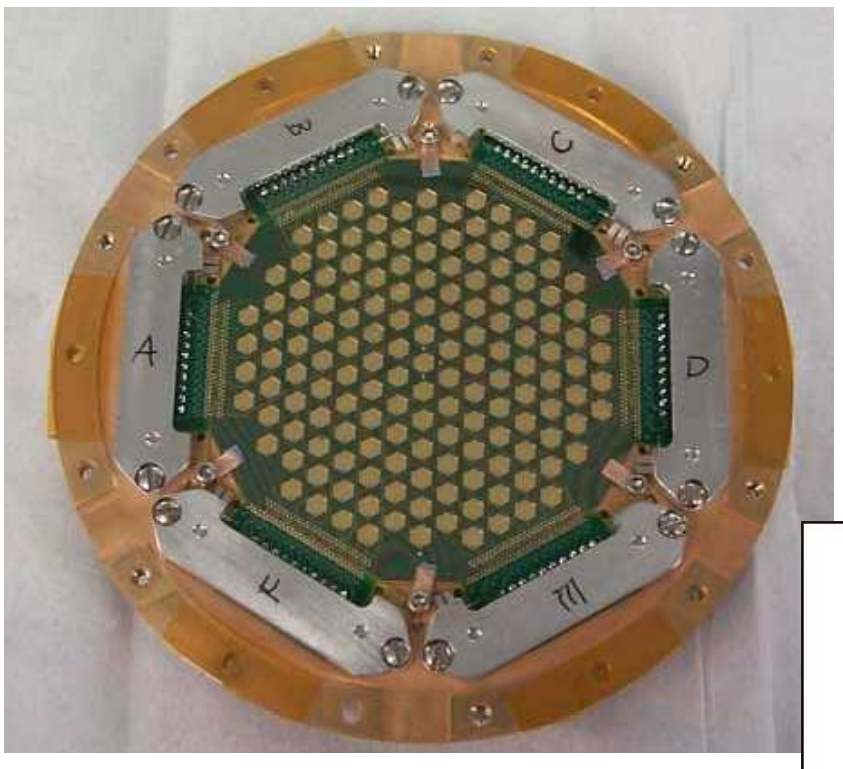
Submillimeter bolometer

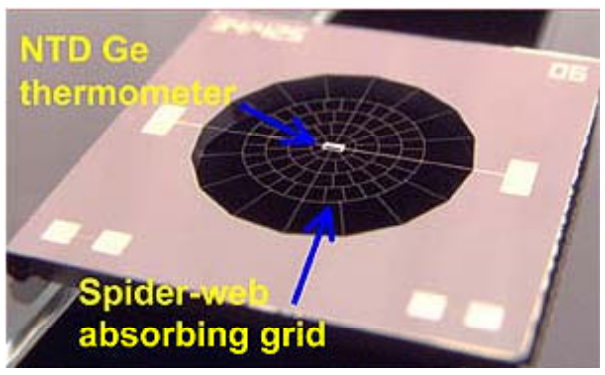


Schematic drawing of a detector.

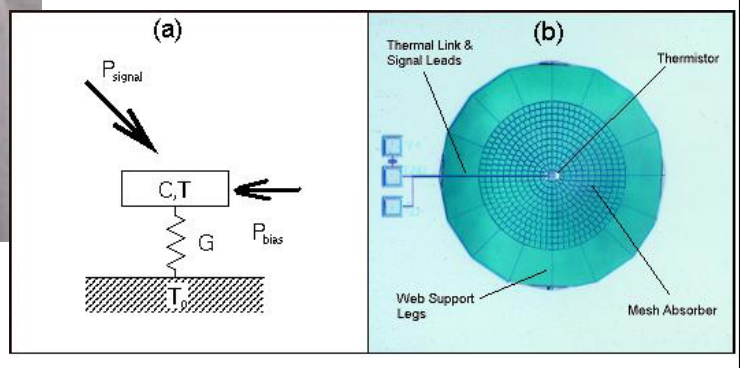
GSFC microcalorimeter lab

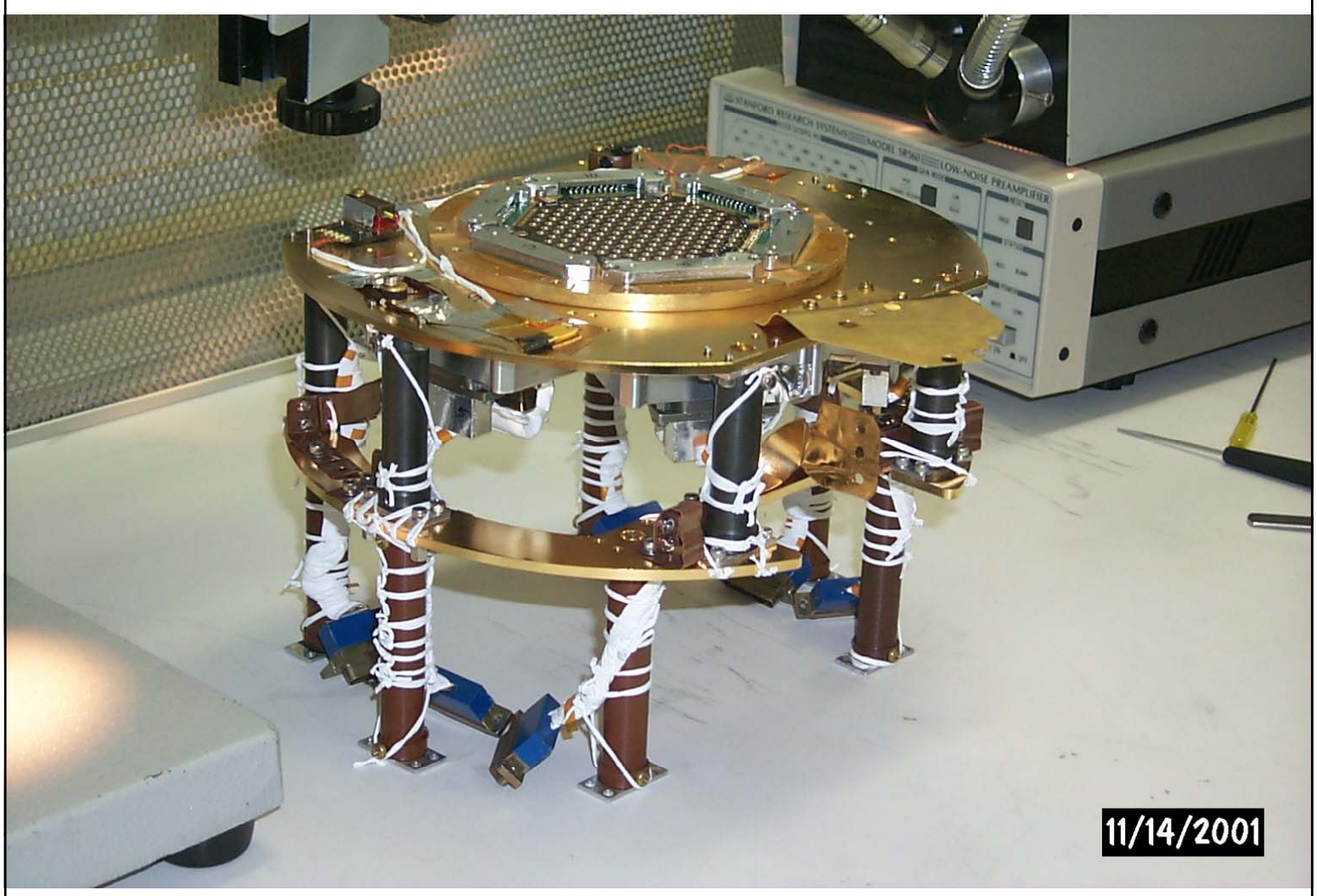
BOLOCAM focal plane array





Spider-web bolometer from *Herschel*/SPIRE

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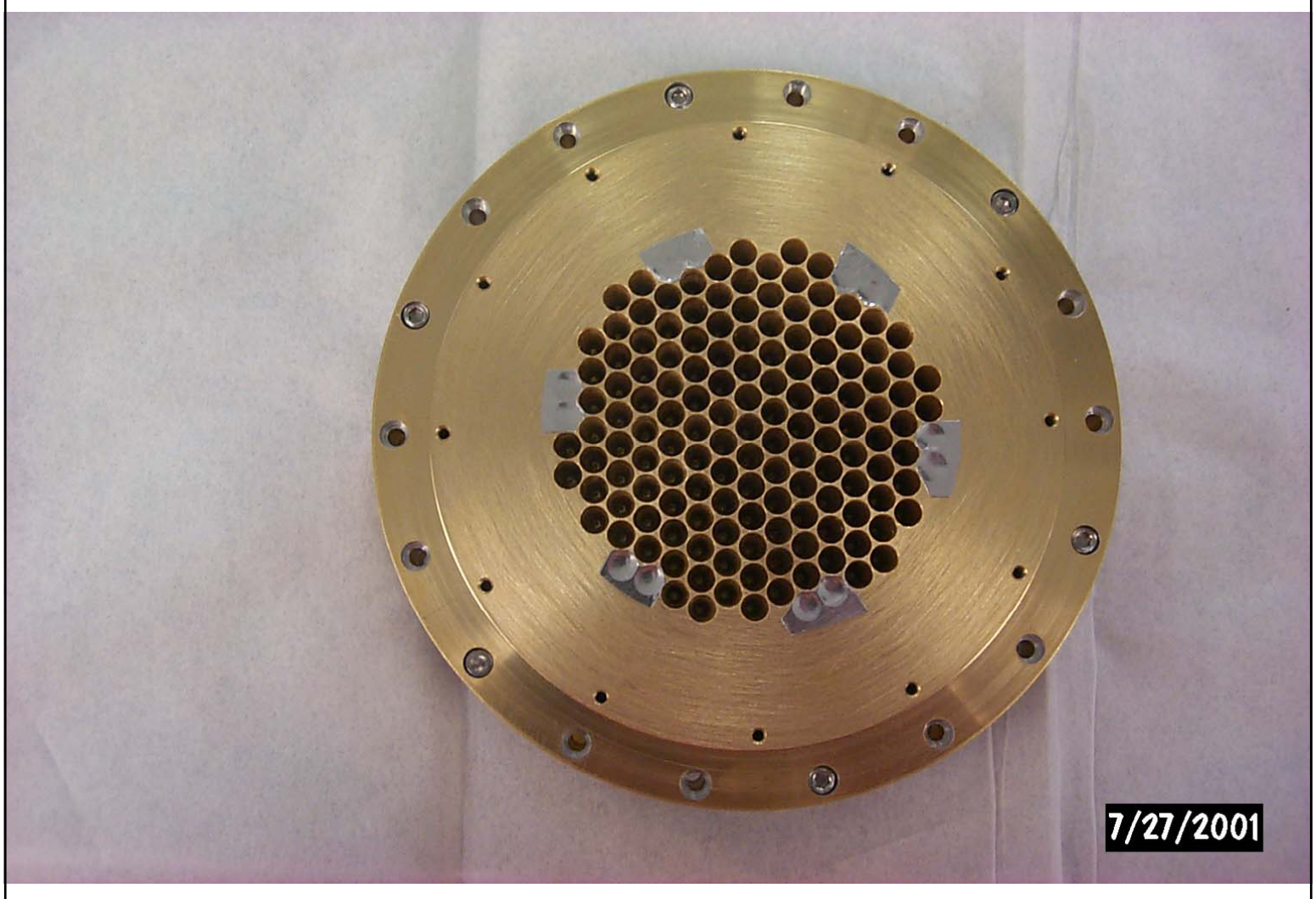
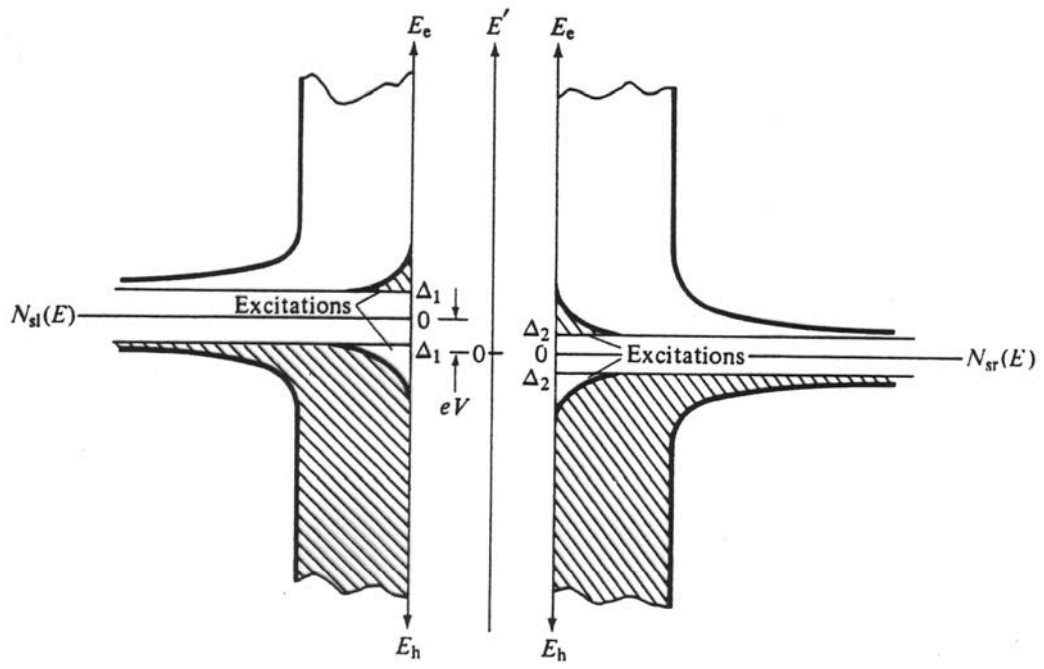

7/27/2001



igure 2.16b. Diagram for determination of tunneling currents between two different superconductors with $T \neq 0$ and an applied voltage V.

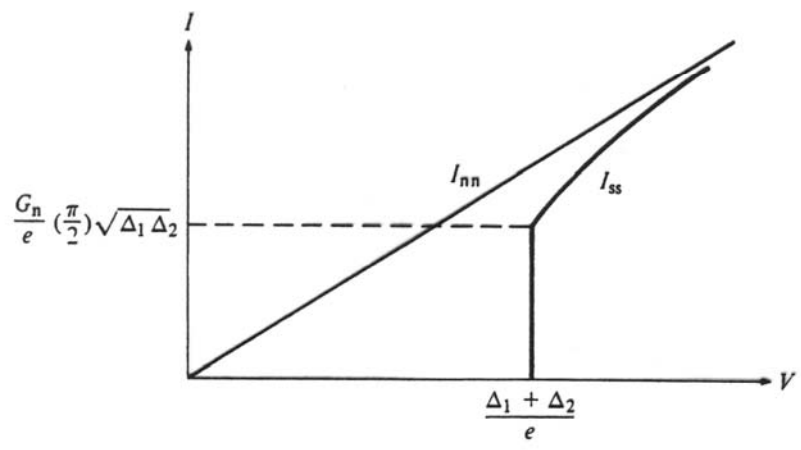


Figure 2.16c. Tunneling between superconductors at $T = 0$ compared with tunneling between the same materials in the normal state.

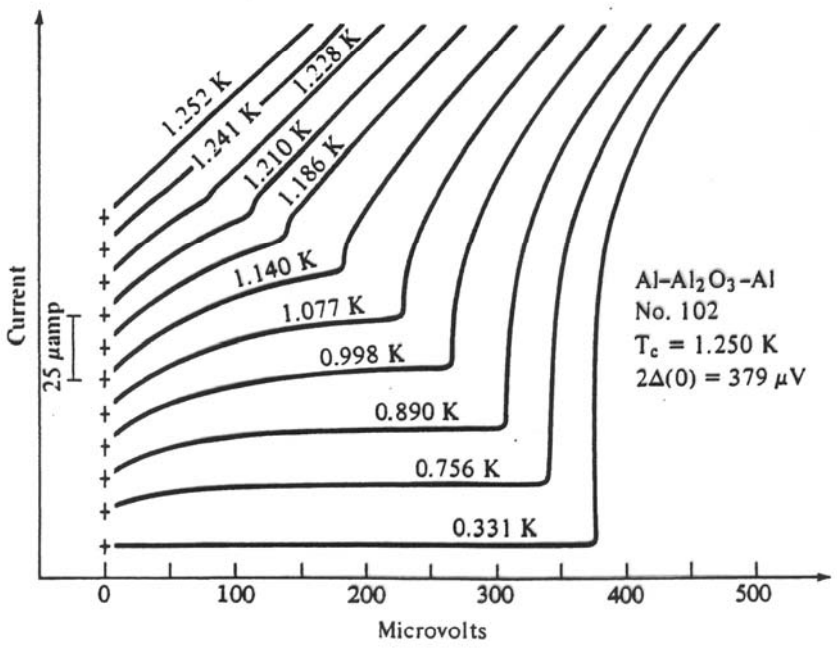


Figure 2.16e. Experimental data on an Al–Al_2O_3–Al tunnel junction. The zero points (+) are staggered for clarity.

From B. L. Blackford and R. H. March, "Temperature dependence of the energy gap in superconducting Al–Al_2O_3–Al tunnel junctions," *Canadian Journal of Physics*, Vol. 46, p. 143, 15 January 1968. Reproduced with permission of the National Research Council of Canada.