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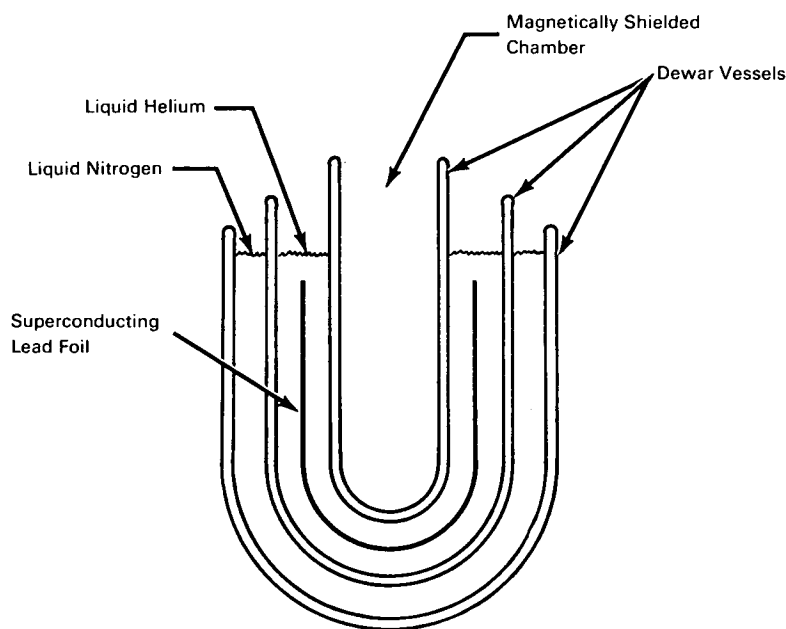
Brief 65-10297

NASA TECH BRIEF



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Superconductor Shields Test Chamber From Ambient Magnetic Fields



The problem: Constructing an inexpensive test chamber that maintains a constant, low magnetic field.

The solution: A test chamber that is shielded from ambient magnetic fields by a lead foil cylinder maintained in a superconducting state by liquid helium.

How it's done: The lead cylinder, constructed of 0.007-inch-thick foil, is suspended in a Dewar vessel filled with liquid helium to cool the lead to a superconducting state. A current is induced in the lead foil cylinder by the application of a very small magnetic

field (less than 2×10^{-5} gauss) during the cooling process. The central space within this Dewar system then encloses the initially applied small magnetic field at a constant value even in the presence of steady or changing ambient magnetic fields.

Notes:

1. The internal field of this device has been demonstrated to be axially stable to better than $+1$ gamma (10^{-5} gauss) -2 gamma in an ambient field of 500 gamma.
2. This innovation should be useful as a laboratory research and testing device for magnetic components.

(continued overleaf)

3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
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Pasadena, California, 91103
Reference: B65-10297

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

Source: A. F. Hildebrandt
(JPL-627)