

Laboratori Nazionali di Frascati

LNF-62/92 (1962)

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FROM A  $Po^{210}$  SOURCE.

Estratto dal: Phys. Letters, 2, 264 (1962)

DECAY OF TRAPPED-FLUX IN A SUPERCONDUCTING RING  
 SUBJECTED TO IRRADIATION BY  $\alpha$ -PARTICLES FROM A  $\text{Po}^{210}$  SOURCE

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Received 20 September 1962

We have measured how the trapped-flux in a Pb superconducting ring changes under a bombardment of  $\alpha$ -particles. The experimental apparatus was as shown in fig. 1. The Po source had a thin gold layer covering the Po in order to fix it more effectively on its Pt backing. This source was prepared by us using electrolytic deposition of Po on a 10 mm diameter cylinder of Pt of height 5 mm. The activity of whole source was near 6 mC.

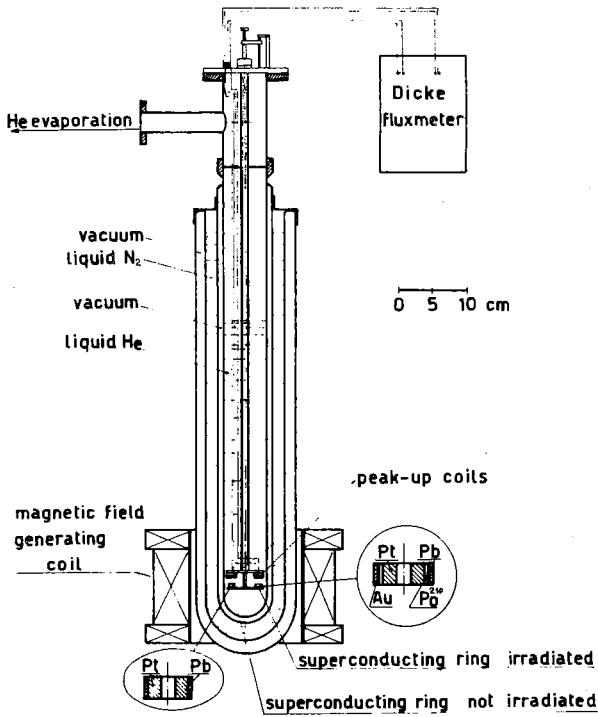


Fig. 1. Experimental apparatus.

The lead ring was also obtained by electrolytic deposition. The thickness was  $6 \mu$  (measured and calculated).

The trapped-flux was nearly 48 maxwell (corresponding to nearly 60 gauss). The results of measurements are:

- a. a decay of the trapped-flux as shown in fig. 2 (in fig. 3 the same graph is drawn on a logarithmic scale); the time for the flux to reach half

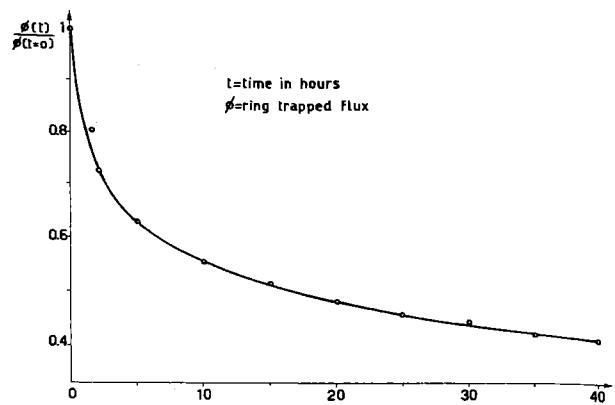


Fig. 2. Decay of trapped-flux.

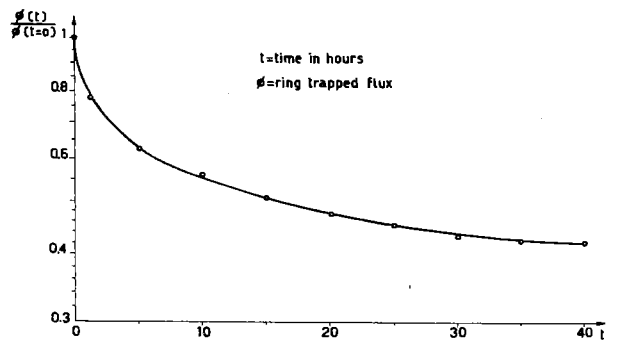


Fig. 3. Decay of trapped-flux in logarithmic scale.

- b. when we again excited the magnetic field generating coil, the trapped-flux was again the same. Its value was not affected by preceding  $\alpha$ -particle irradiation.

We repeated the measurement six times on this ring and two other times on another ring of different thickness and with a source of different activity, not having a thin gold layer between Po and lead as in other rings. As a check we did the measurements at the same time with the lead ring deposited on a platinum cylinder not irradiated.

The authors thank Dr. Scaramuzzi and Dr. Modena for helpful discussions and advice during the experiment.