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P. de Feo and G. Sacerdoti: DECAY OF TRAPPED-FLUX IN A SUPER-  
CONDUCTING RING SUBJECTED TO AN IRRADIATION OF  $\alpha$  PARTI-  
CLES FROM A  $\text{Po}^{210}$  SOURCE.

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We have measured how the trapped-flux in a Pb superconducting ring changes under a bombardment of  $\alpha$ -particles. The experiment has been suggested by G. Sacerdoti. The scheme of the experimental apparatus is 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.

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

The measurements of trapped-flux have been done by introducing the superconducting ring in the peak-up coil by moving up and down the holding stick.

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

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- a) the decay of the trapped-flux as shown in fig. 2. In fig. 3, the same graph is indicated on a logarithmic scale. The time for the flux to reach half its initial value is about 14 h;
- 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 ring. As a check we did the measurements at the same time with lead ring deposited on a Platinum cylinder non irradiated.

We are now studying the possibility to detect with great sensitivity the change of the trapped-flux by using a resonant cavity with Sacchetti, Balzamo, Smriglio.

The authors thank Dr. Scaramuzzi and Dr. Modena for the helpful discussion and advices during the experiment.

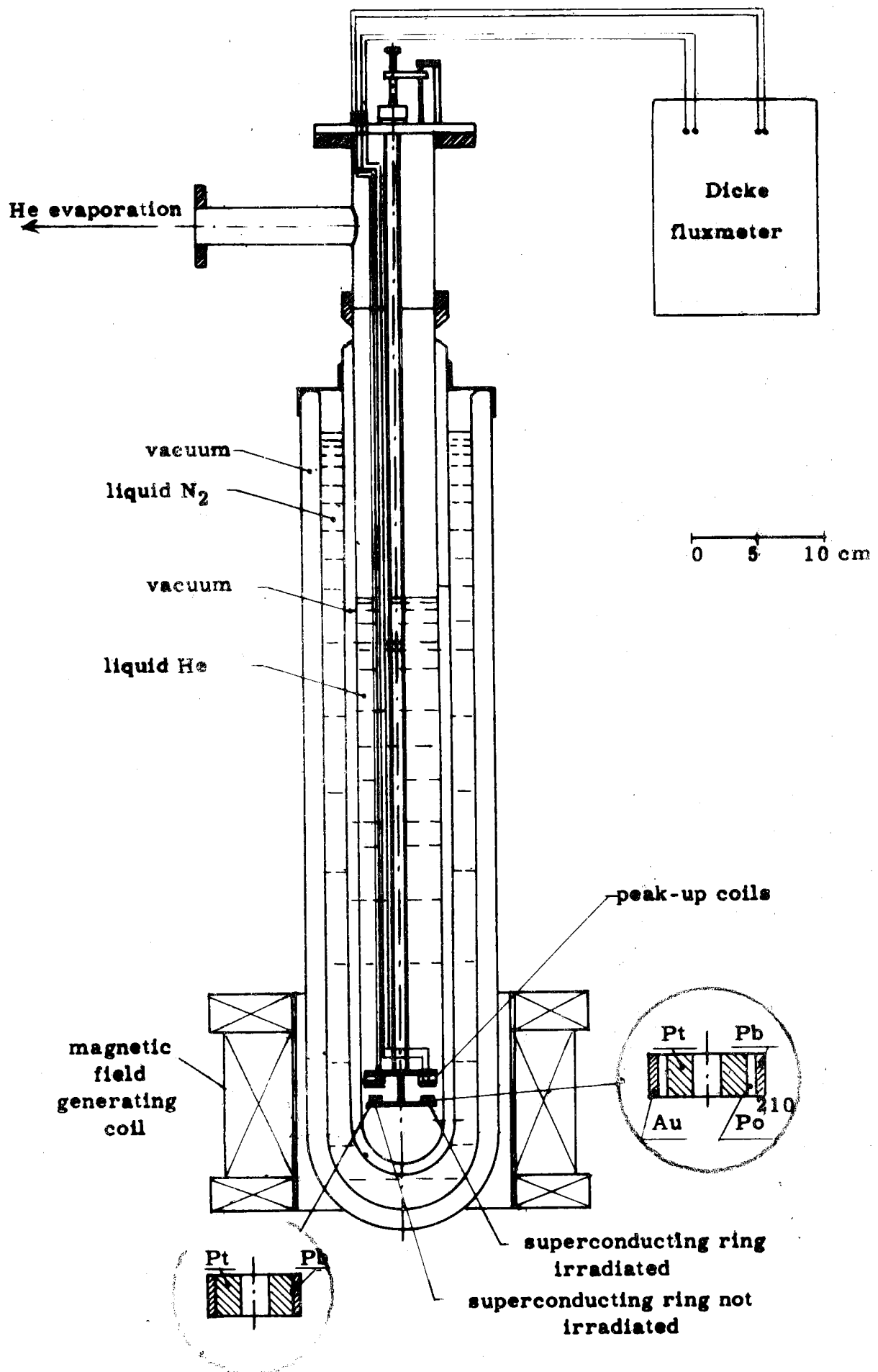


FIG. 1

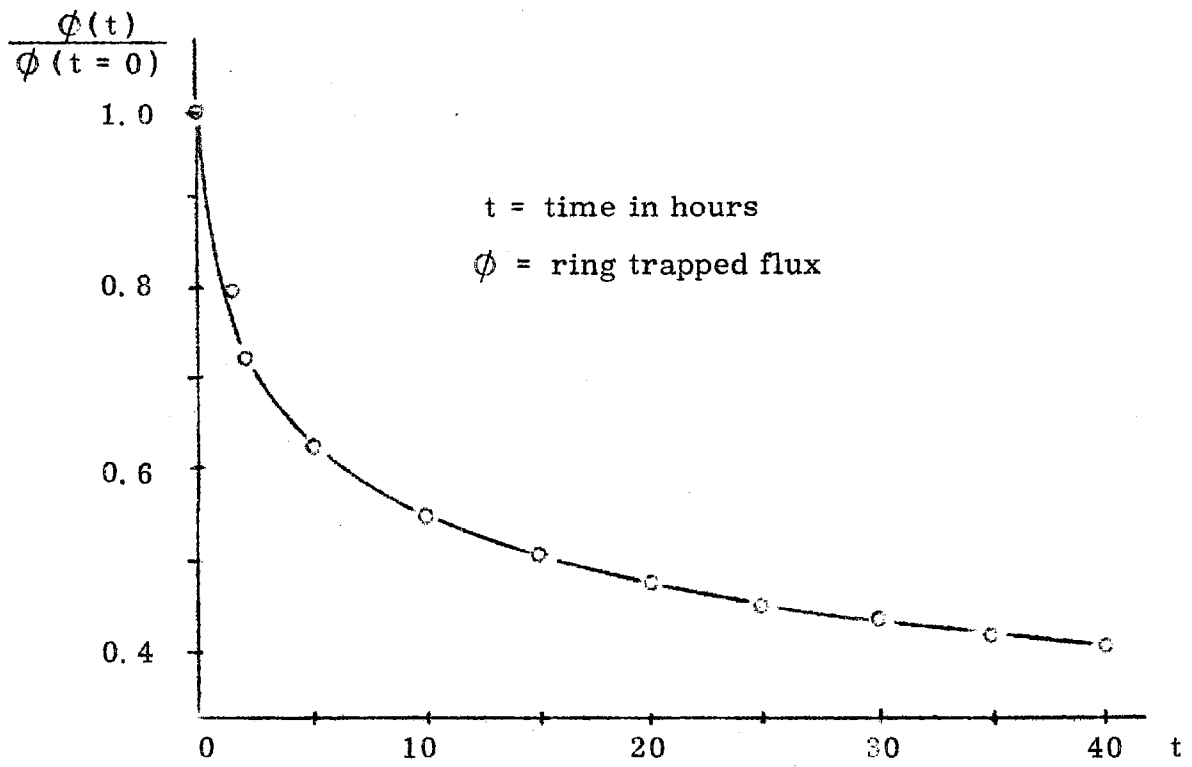


FIG. 2 - Decay of trapped-flux.

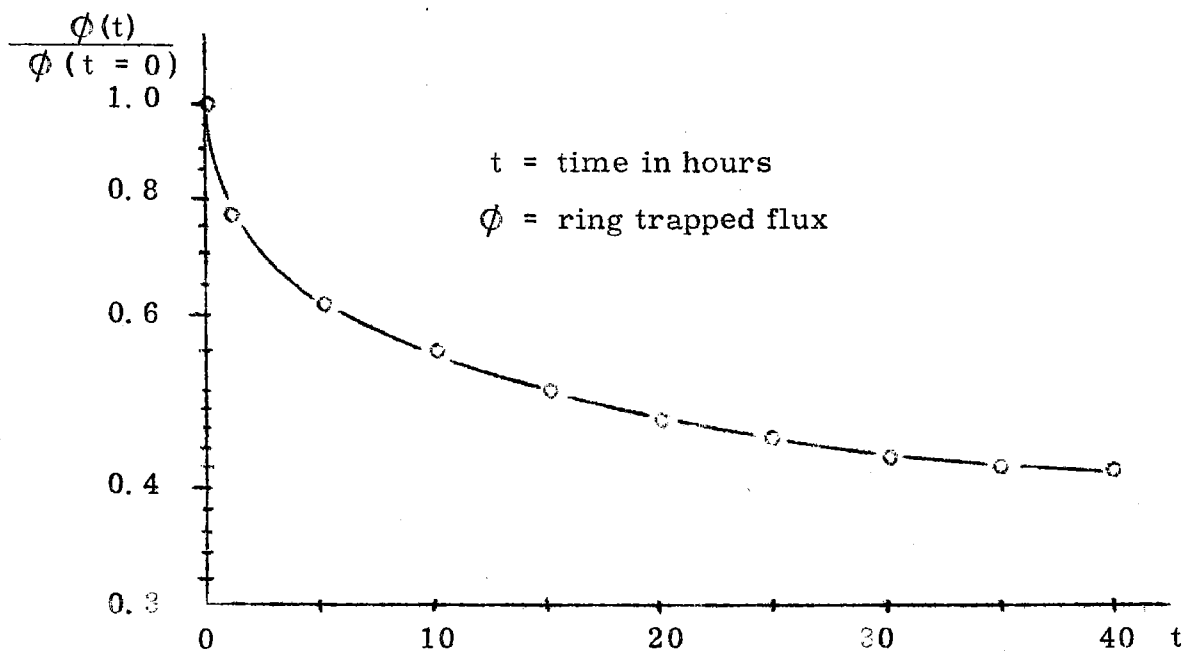


FIG. 3 - Decay of trapped-flux in logarithmic scale.