

4-point probe method for resistance measurement

(Abstracted from PHYS 2711 Physics Laboratory II

Experiment 2 Electrical Resistivity of Metal and Semiconductor)

Description of the experiment

- (1) The sample is an YBCO tablet.
- (2) The circuit is shown in Fig. 5. The power supply delivers a current to the sample connected in series with a “protective” resistor R_0 . Measure the resistance of R_0 ($\sim 100\ \Omega$) Using a DMM.
- (3) Connect the circuit shown in Fig 1.

Note: The resistor R_0 (kept at room temperature) is also used as a current limiter. In this circuit, R_0 is much larger than the sample resistance R_s . Because of this, you will find that even when R_s changes as a function of T , a nearly constant current is maintained.

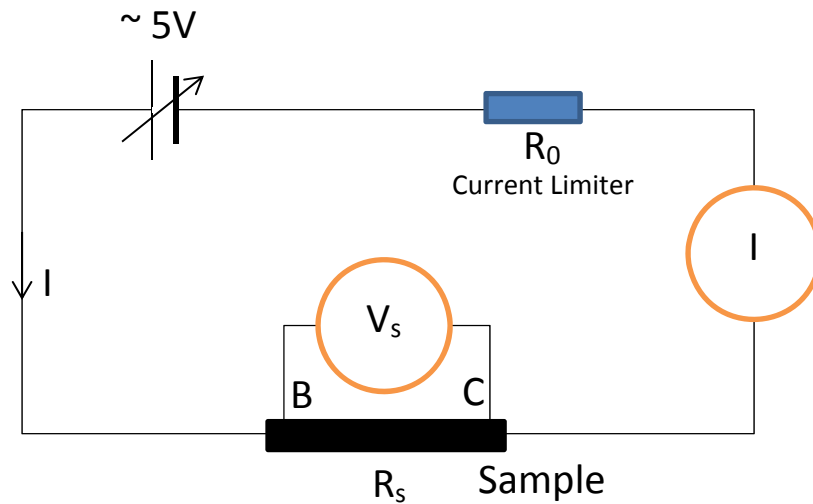


Figure 1 4-point probe method for resistance measurement.

The sample resistance is $R_s = R_{BC} = V_s / I$

Edited by Gary Lai

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