

Hall effect measurements for a Ge sample

Aayush Arya

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Results

The values measured are as follows

Hall current	V_H ($B = 0.4447$)	V_H ($B = 0.7441$)
2.0	34.507	57.511
2.5	43.133	71.889
3.0	51.760	86.267
3.5	60.387	108.645
4.0	68.014	115.625
4.5	77.640	129.4
5.0	86.267	143.778

Table 1: Measurements for Ge, thickness=0.5mm

The data has been plotted in the figure below.

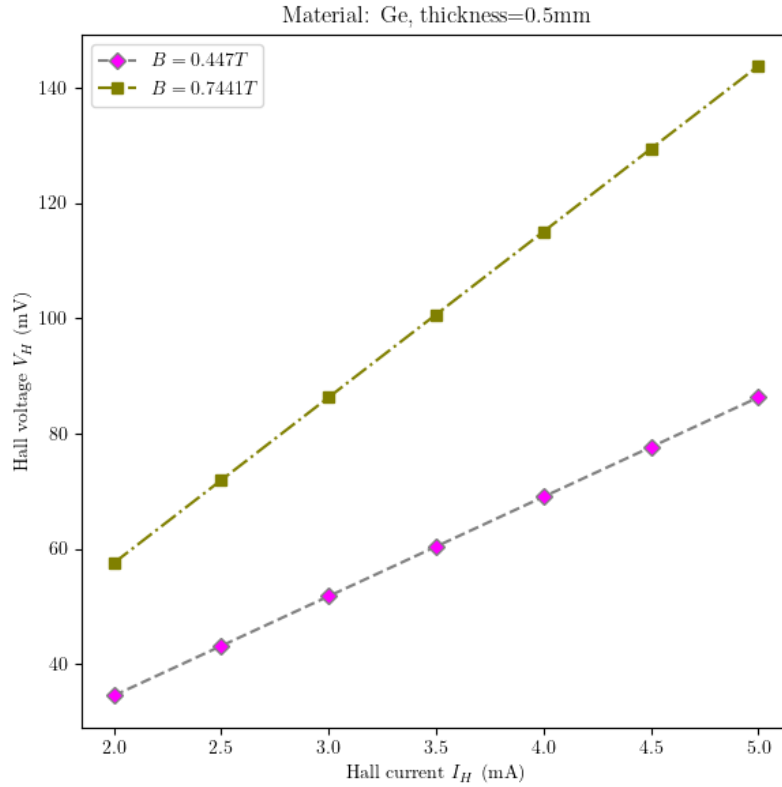


Figure 1: Plot of hall voltage vs current

Since the hall voltage and hall current are related by

$$V_H = \frac{R_H IB}{t}$$

where

$$R_H = \pm \frac{1}{ne}$$

The values for R_H and n could be estimated from the slope of the data.

The calculated values of R_H and carrier concentration n are 0.01939 and 3.221×10^{20} respectively. The carriers are holes as the estimated value of R_H is positive, which implies p-type material.

The plots were made in Python (script available on request).