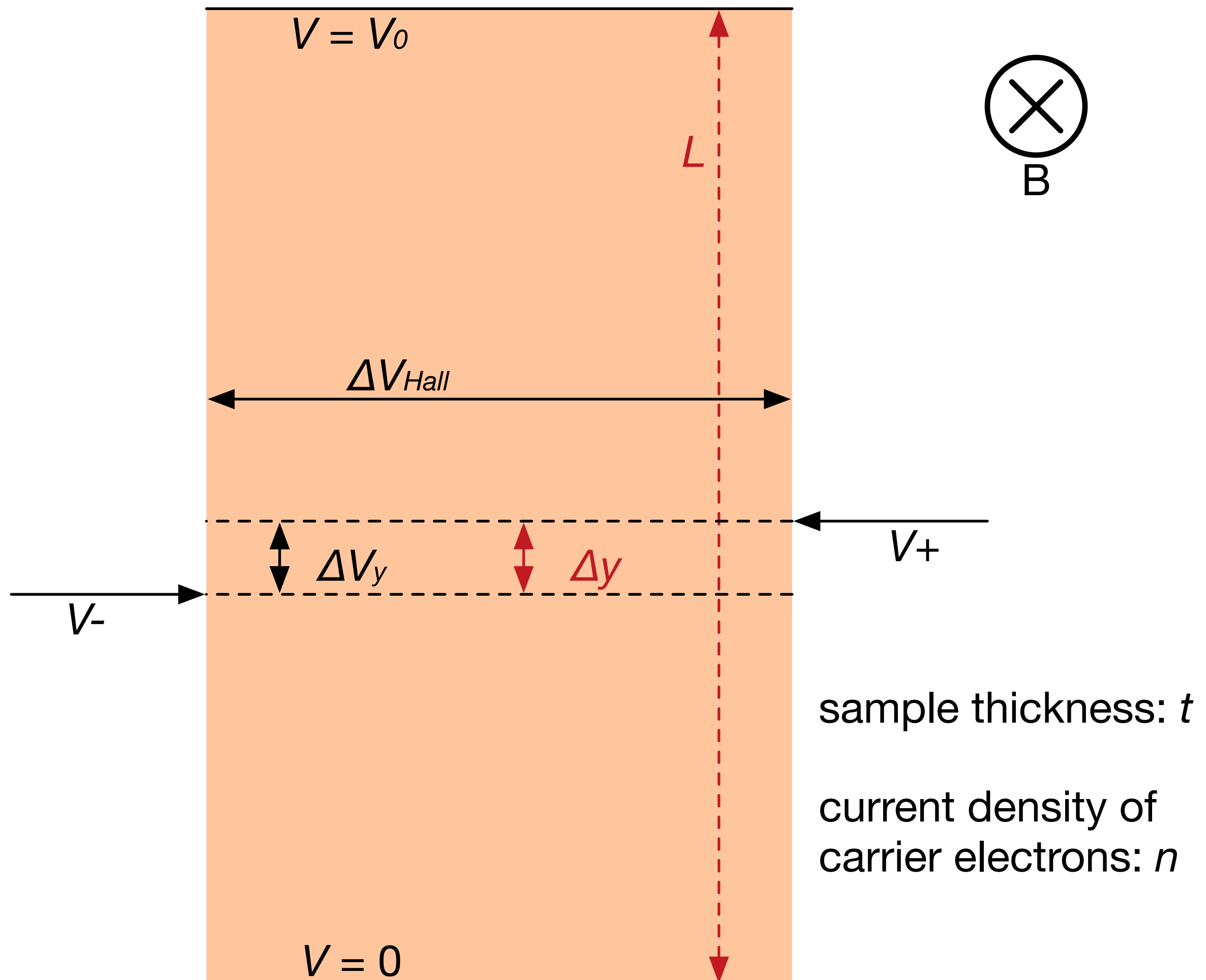


Voltage Offset due to Transverse Misalignment of Probes in Samples

By Stefan Countryman



$$\Delta V_{measured} := V+ - V- = V_H + \Delta V_y$$

$$\Delta V_y = (V_0/L) * \Delta y$$

$$V_H = -IB/net$$

Note that the Actual voltage you measure, $\Delta V_{measured}$, depends on the longitudinal offset Δy of your measuring probes as well as the Hall voltage, V_H . You should not assume that your sample was prepared with perfect longitudinal alignment of the probes along the applied voltage axis, but instead should take steps to measure and account for this effect in such a way that the final plot in your paper will only contain the Hall voltage and not the longitudinal offset voltage. Note that the longitudinal offset scales linearly with applied voltage but does not vary with magnetic field B . If you switch the magnetic field direction between experimental runs, then the average of each run will be the longitudinal offset (you can calculate this from lines of best fit to reduce noise); you can then subtract this longitudinal offset line from the measured data in both directions in order to isolate the Hall voltage.