

Ampère's Law (Restricted Version)



The circulation integral of the magnetic field \vec{B} around any closed curve (loop) C is equal to the net electric current I_C flowing through the loop:

$$\oint \vec{B} \cdot d\vec{\ell} = \mu_0 I_C, \quad \text{with } \mu_0 = 4\pi \times 10^{-7} \text{ Tm/A}$$

The symbol \oint denotes an integral over a closed curve in this context.

Note: Only the component of \vec{B} tangential to the loop contributes to the integral.

The positive current direction through the loop is determined by the right-hand rule.

