

The magnetic moment is a magnetic property of an object. It tells you how much torque will result from an external magnetic field:

$$\vec{\tau} = \vec{\mu} \times \vec{B}$$

The larger the magnetic moment, the larger the torque from the magnetic field.

The torque is perpendicular to both the magnetic field and the magnetic moment.

Dimensions: $[\vec{\mu}] = [\text{torque/magnetic field}] = [QL^2/T]$

Current Loop: For a current loop, the magnetic moment is $|\vec{\mu}| = IA$, where I is the current in the loop and A is the area. The direction follows the Right Hand Rule.

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When $\vec{\mu}$ is aligned with B (parallel or antiparallel), then the torque is zero (stable or unstable equilibrium points.)