

Physics - Circular Motion

Topics : [Computer engineering](#)

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1. Circular Motion:

Circular motion involves the movement of an object along a circular path, where the object's distance from a fixed point remains constant. Key concepts include:

- **Angular Displacement:** Change in angle as an object moves along the circular path.
- **Angular Velocity:** Rate of change of angular displacement with respect to time (measured in radians per second).
- **Angular Acceleration:** Rate of change of angular velocity with respect to time (measured in radians per second squared).
- **Period:** Time taken for an object to complete one full revolution around the circular path.
- **Frequency:** Number of complete revolutions made by an object per unit time.

2. Uniform Circular Motion:

- In uniform circular motion, the object's speed remains constant, but its direction changes continuously.
- Acceleration in uniform circular motion is centripetal acceleration, directed towards the center of the circle.
- Centripetal force is required to keep an object in uniform circular motion, provided by an inward force like tension, friction, or gravity.

3. Non-Uniform Circular Motion:

- In non-uniform circular motion, the object's speed and/or direction change over time.
- Characterized by tangential acceleration (change in speed) and centripetal acceleration (change in direction).

4. Applications:

- Circular motion is observed in various natural and artificial phenomena, including planetary orbits, electron motion in atoms, vehicle wheels' rotation, and centrifuge motion.

5. Analysis:

- Circular motion can be analyzed using kinematic concepts like displacement, velocity, acceleration, and force.

- Equations derived from these concepts describe the motion of objects in circular paths and help solve related problems.

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