

11:27 PM] Introduction The circular and rotational motion is one of the most important phenomena in physics and engineering, as it forms a fundamental basis for understanding many vital phenomena and applications in our daily and industrial lives. In this report, we will delve into circular and rotational motion in detail, starting from analyzing the concepts of angular velocity and angular acceleration, to understanding Newton's laws that govern these motions precisely. We will also focus on the engineering and technological applications of circular and rotational motion, such as designing engines, machinery, controlling robots, and spacecraft.

A body that rotates about a rotation axis, changing its angular position from θ_1 to θ_2 , undergoes an angular displacement $\Delta\theta$. Additionally, we will discuss its everyday applications in fields such as gaming industry and electronics, where rotational motion plays a crucial role in the design and functionality of these devices.

If the angular velocity of a body changes from ω_1 to ω_2 in a time interval $\Delta t = t_2 - t_1$, the average angular acceleration α_{avg} of the body is $\alpha_{avg} = (\omega_2 - \omega_1) / (t_2 - t_1)$. The (instantaneous) angular acceleration α We will also provide practical examples and real-life applications of these motions, such as the movement of planets in the solar system and their effects on their orbits and other celestial bodies.

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