Torque and Rotational Dynamics

AP Physics C: Mechanics · Vocabulary in context

Word	Example
rigid body /ˈrɪdʒɪd ˈbɒdi/	A wheel can be treated as a **rigid body**.
angular displacement /ˈæŋgjʊlə dɪˈspleɪsmənt/	After a quarter turn, the **angular displacement** is 90°. 
radians /ˈreɪdɪənz/	Half a turn is π **radians**. 
angular velocity /ˈæŋgjʊlə vəˈlɒsɪti/	The wheel turns with an **angular velocity** of 3 rad/s.
angular acceleration /ˈæŋgjʊlə əkˌseləˈreɪʃn/	A wheel that spins faster and faster has an **angular acceleration**.
tangential acceleration /tænˈdʒenʃl əkˌseləˈreɪʃn/	**Tangential acceleration** changes the speed along a circle.
centripetal acceleration /senˈtrɪpɪtl əkˌseləˈreɪʃn/	A car turning a corner has a **centripetal acceleration**.
Torque /tɔːk/	**Torque** is a turning force.
vector product /ˈvektə ˈprɒdʌkt/	The **vector product** of two parallel vectors is zero.
moment arm /ˈməʊmənt ɑːm/	Measure the **moment arm** perpendicular to the force's line.
right-hand rule /raɪt hænd ruːl/	Use the **right-hand rule** to find the force on a positive charge.
Rotational inertia /rəʊˈteɪʃənl ɪˈnɜːʃə/	**Rotational inertia** resists changes in spin.

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linear density /ˈlɪnɪə ˈdensɪti/	A uniform rod of mass 2 kg and length 4 m has a **linear density** of 0.5 kg/m. 
parallel-axis theorem /ˈpærəlel ˈæksɪs ˈθɪərəm/	The **parallel-axis theorem** finds rotational inertia about an axis away from the centre.
net torque /net tɔːk/	If the **net torque** is zero, the wheel does not speed up or slow down its spin.
rotational equilibrium /rəʊˈteɪʃənl ˌiːkwɪˈlɪbrɪəm/	A balanced see-saw is in **rotational equilibrium**.
static equilibrium /ˈstætɪk ˌiːkwɪˈlɪbrɪəm/	A ladder leaning still against a wall is in **static equilibrium**.
pulley /ˈpʊli/	The rope passes over a **pulley**.