Energy and Momentum of Rotating Systems

AP Physics C: Mechanics · Vocabulary in context

Word	Example
rotational kinetic energy /rəʊˈteɪʃənl kɪˈnetɪk ˈenədʒi/	A spinning wheel stores **rotational kinetic energy**.
rotational inertia /rəʊˈteɪʃənl ɪˈnɜːʃə/	A heavy flywheel has a large **rotational inertia**, so it is hard to spin up.
torque /tɔːk/	A longer spanner gives more **torque**.
angular displacement /ˈæŋgjʊlə dɪˈspleɪsmənt/	After a quarter turn, the **angular displacement** is 90°. 90°
Angular momentum /ˈæŋgjʊlə məʊˈmentəm/	**Angular momentum** stays constant without outside torque.
angular impulse /ˈæŋgjʊlə ˈɪmpʌls/	A push on a door gives it an **angular impulse**.
conserved /kənˈsɜːvd/	Charge is **conserved**: none is lost at the junction.
rolling without slipping /ˈrəʊlɪŋ wɪˈðaʊt ˈslɪpɪŋ/	For a wheel **rolling without slipping**, the centre's speed equals radius times angular speed.
disk /dɪsk/	A solid **disk** spins more easily than a ring of the same mass and radius.
hoop /huːp/	A **hoop** has all its mass at the edge.
centripetal force /senˈtrɪpɪtl fɔːs/	The string gives the **centripetal force** to the spinning ball.

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satellite /ˈsætəlaɪt/	The **satellite** goes round the Earth.
gravitational potential energy /ˌgrævɪˈteɪʃənl pəˈtenʃl ˈenədʒi/	A rock on a cliff has **gravitational potential energy**.
total mechanical energy /ˈtəʊtl mɪˈkænɪkl ˈenədʒi/	Without friction, the **total mechanical energy** stays the same.
escape velocity /eˈskeɪp vəˈlɒsɪti/	A rocket needs the **escape velocity** to leave the Earth.
elliptical orbit /ɪˈlɪptɪkl ˈɔːbɪt/	A comet moves on a long **elliptical orbit**.
Kepler's second law /ˈkepləz ˈsekənd lɔː/	**Kepler's second law** says a planet moves faster when it is closer to the Sun.

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