SP	HW1A	1B	2A	2B	2C	3A	...
GB	1	2	3	4	5	6	...
→	100%	90%	100%	98%	90%	100%	
	×1.1		×1.1				
	HW1		HW2				
	105%		102%				

only 2d appear
13 missing

lectures (iclickers) → last few weeks not imported.

10 discussions + last week's discussion.

9 reports

Work and rigid bodies

$$T = \frac{1}{2} m v_c^2 + \frac{1}{2} I_c \omega^2 \qquad \text{center of mass}$$

$$\underline{\text{or}} \quad T = \frac{1}{2} I_O \omega^2 = \frac{1}{2} I_M \omega^2 \qquad \text{fixed point}$$

$$E = T + V$$

work: done by non-conservative forces
(forces that don't have potential energies).

e.g. friction

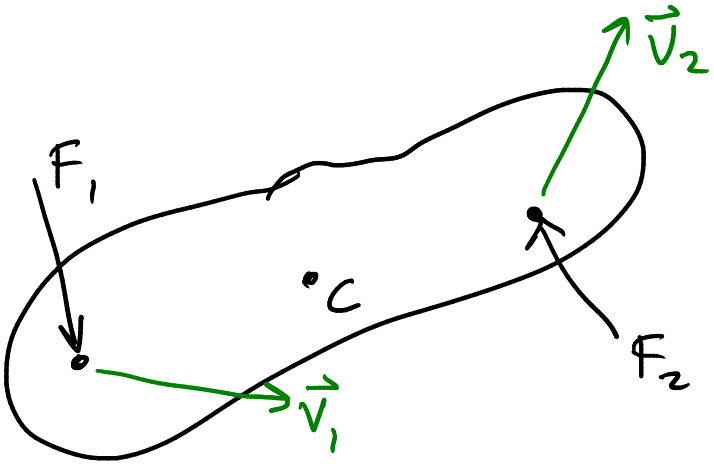
$$E_{final} - E_{initial} = \Delta W = \int \frac{\partial W}{\partial t} dt$$

↑ work done on system

$$\frac{dW}{dt} = \sum \vec{F} \cdot \vec{v}_c + \sum \vec{M} \cdot \vec{\omega}$$

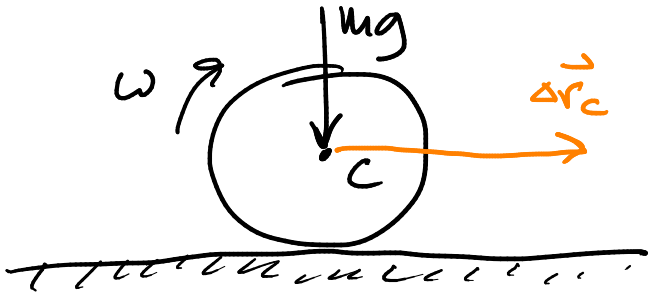
↑ forces ↑ pure moments

$$\underline{\text{or}} \quad \frac{dW}{dt} = \sum \vec{F} \cdot \vec{v}_i + \sum \vec{M} \cdot \vec{\omega}$$



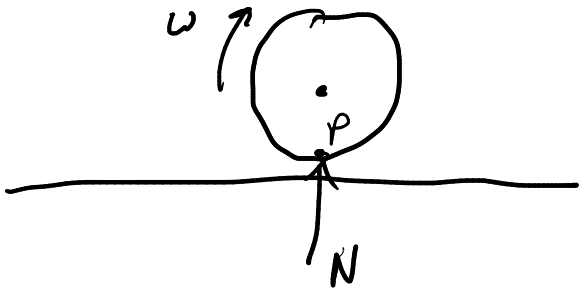
ex

roll w/o slip. and accelerating



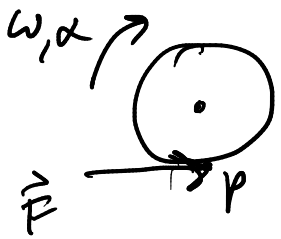
gravity:

$$\Delta W = \vec{F}_g \cdot \Delta\vec{r}_c = 0$$

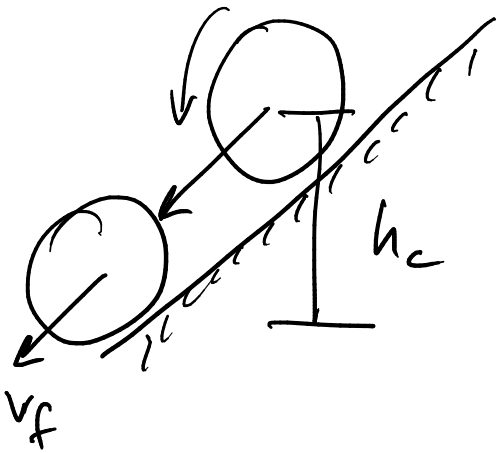


$$\frac{dW}{dt} = \vec{N} \cdot \vec{v}_p = 0$$

↖ Contact point



$$\frac{dW}{dt} = \vec{F} \cdot \vec{v}_p = 0$$



$$v_f = \sqrt{2gh_c}$$

$V = mgh$

$T = \frac{1}{2}mv^2$

v_f

$v = \sqrt{2gh}$ ← indep. of mass.