

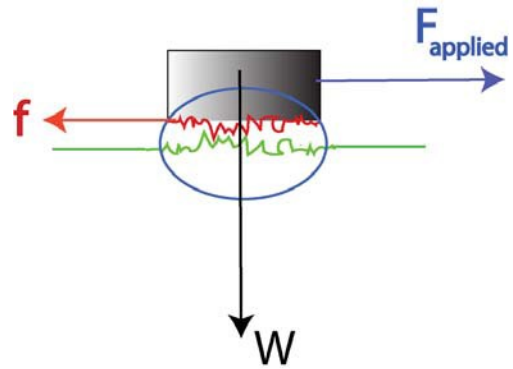
LECTURE PHY 1033C

FRICTION

Force of friction proportional to force **NORMAL** to motion

μ = coefficient of friction

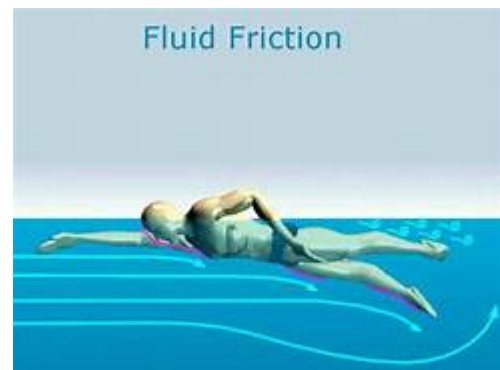
$$f = \mu W$$



Rubber on concrete $\mu \approx 0.8$

Steel on steel 0.07

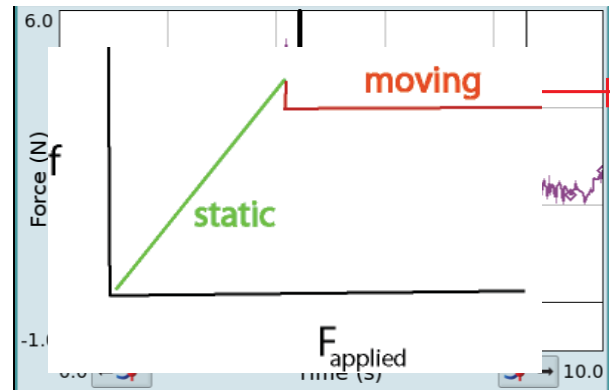
Skater on ice 0.02



Static versus sliding friction

Object does not move until

F_{applied} overcomes static friction



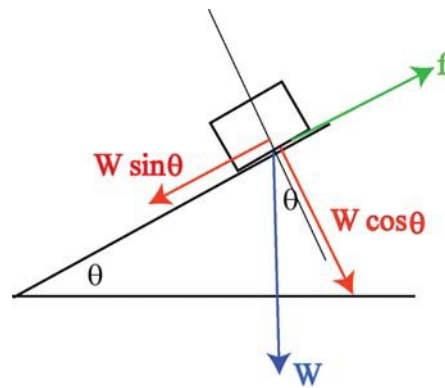
Wikipedia

Inclined plane

How to measure friction

Force normal to plane

$$F = W \cos \theta$$



Friction $f = \mu W \cos \theta$

SLIDES when $W \sin \theta = f$

OR $\tan \theta = \mu$

Generate heat



Force of friction * distance
= work → HEAT

Anti-skid braking

Sense rotation of wheels slowing, and car slides,

--- pulse brake pads off and on rapidly to control skid