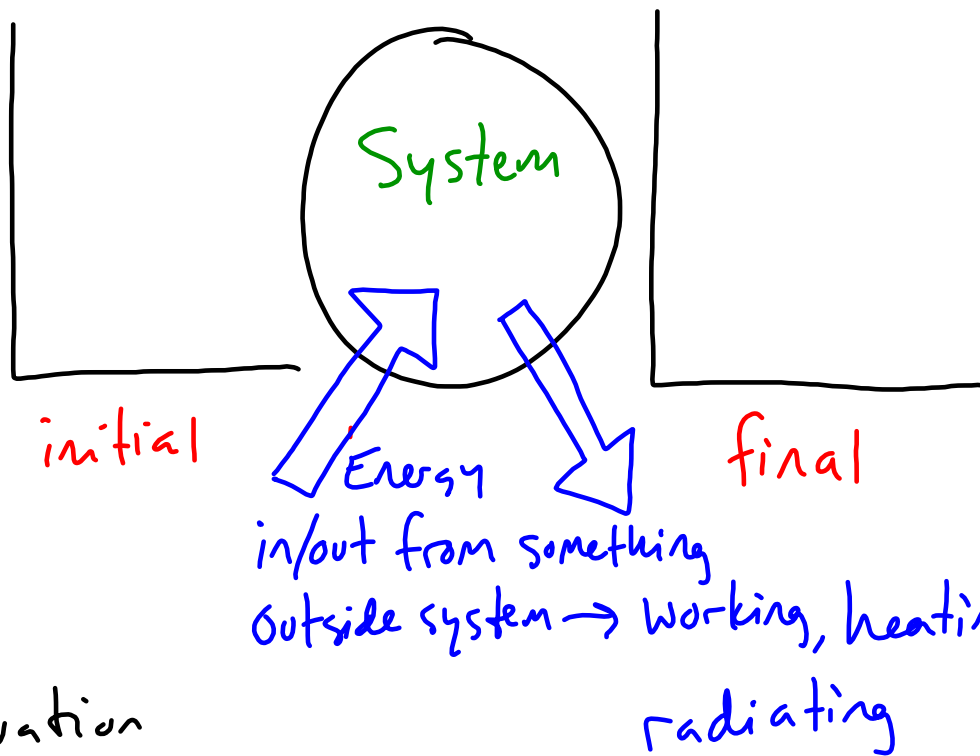


ENERGY

- Scalar quantity \rightarrow +/- means an increase or decrease
- Energy always has a home
 - Stored in an object \rightarrow moving (kinetic) or deformable (elastic)
 - Stored in field \rightarrow potential (gravitational, electric, magnetic)

LOL Diagrams



• Equation

$$\text{Initial Energy} + \text{Energy in} = \text{Final Energy} + \text{Energy out}$$

(working, heating, radiating) (working, heating, radiating)

• Labels

- $E_k \rightarrow$ kinetic energy ($K = \frac{1}{2}mv^2$)

- $E_g \rightarrow$ gravitational potential energy ($E_g = m\Delta h$)

- $E_{el} \rightarrow$ elastic (spring) energy ($E_{el} = \frac{1}{2}kx^2$)

- $E_{th} \rightarrow$ thermal energy (lost due to friction)

Equations

- $K = \frac{1}{2} m v^2$
 - velocity
 - ↳ mass
 - ↳ kinetic energy

- $\Delta U_g = m a_g \Delta h$
 - change in height
 - ↳ acceleration due to gravity
 - ↳ mass
 - ↳ change in gravitational potential energy