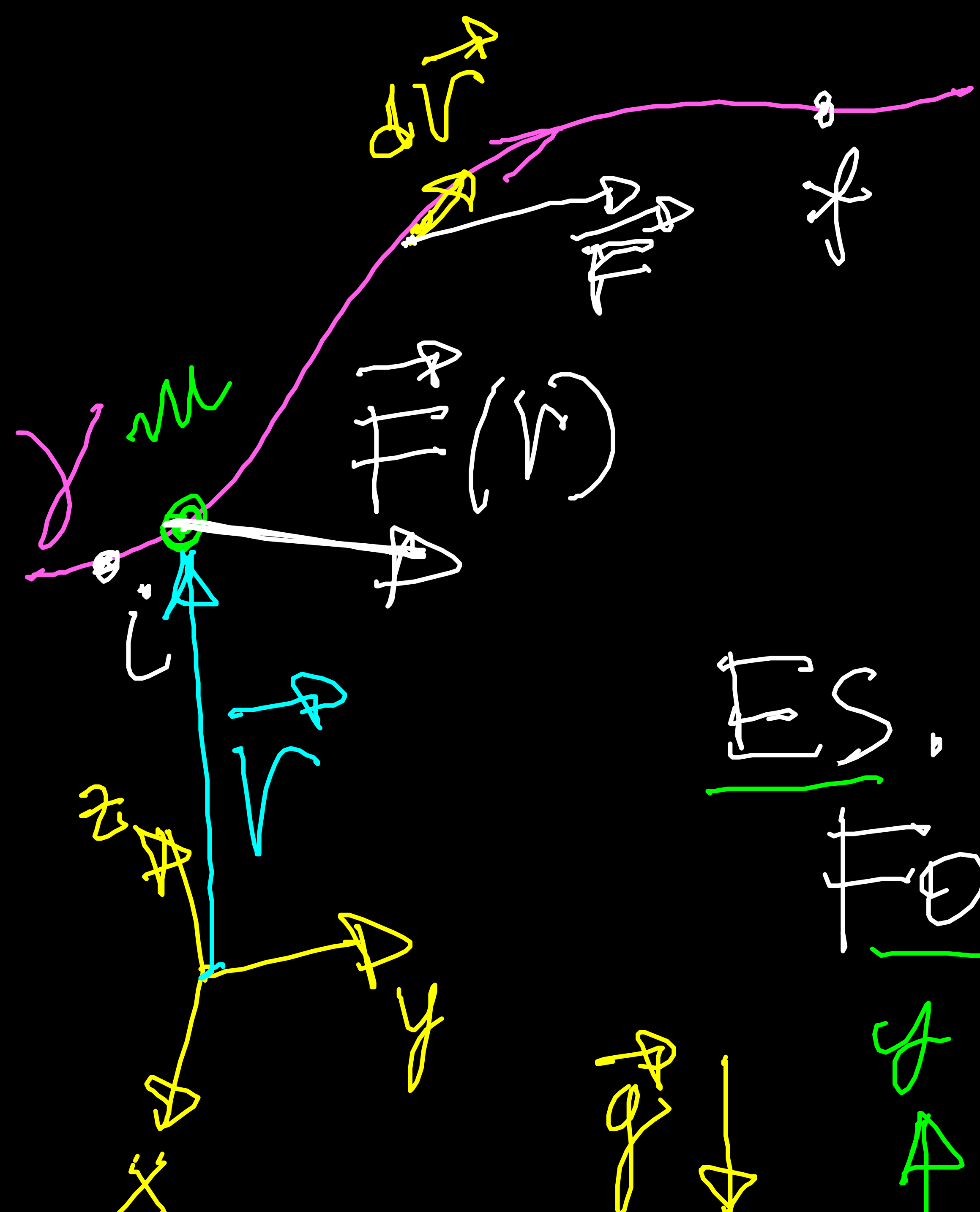
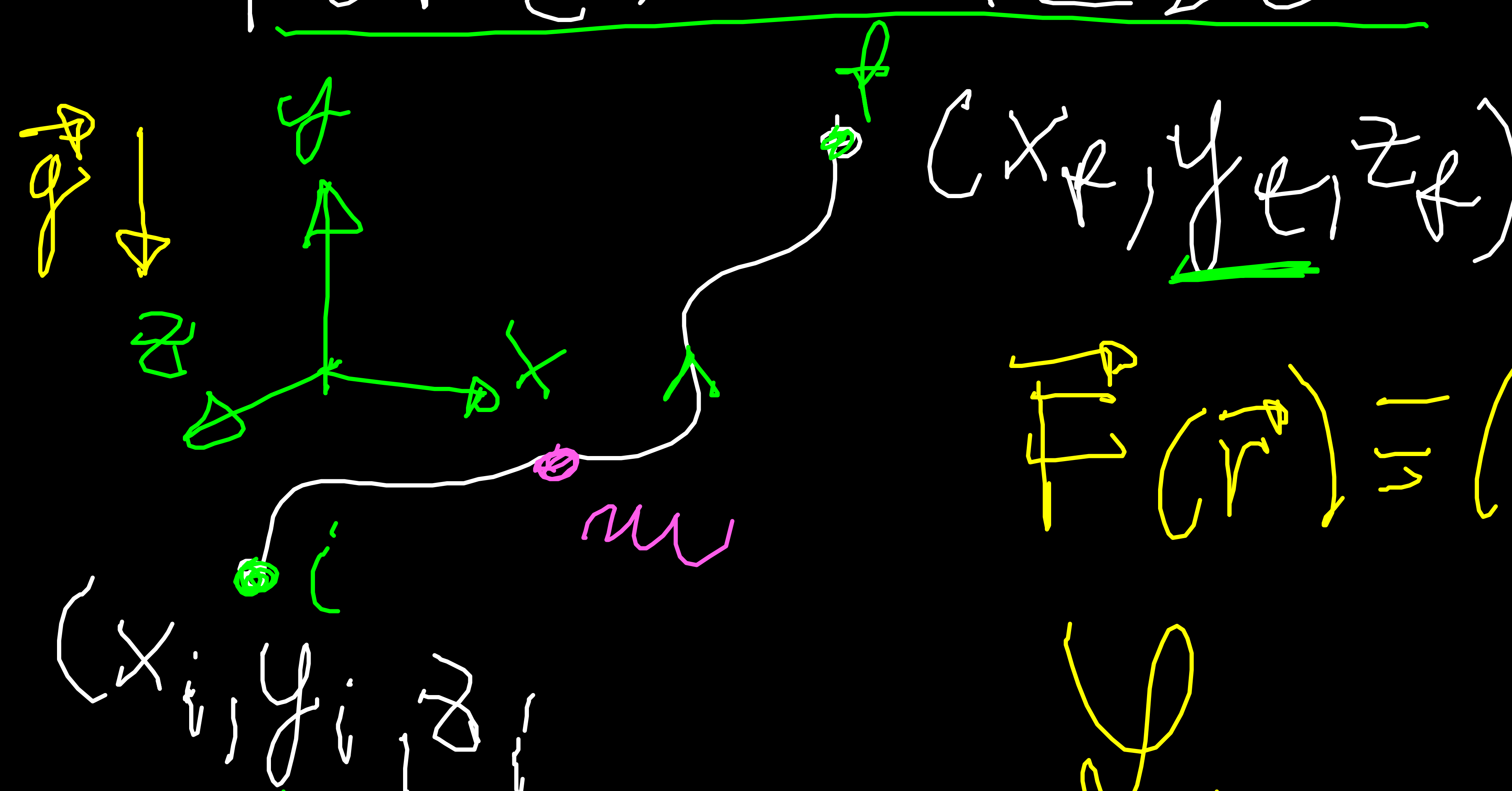
LAVORO DI UNA FORZA



$$\mathcal{L}_{(i\to f,\gamma)} = W = \int_{i,\gamma}^{f} \vec F(\vec r)\cdot d\vec r$$

ES.

FORZA PESO

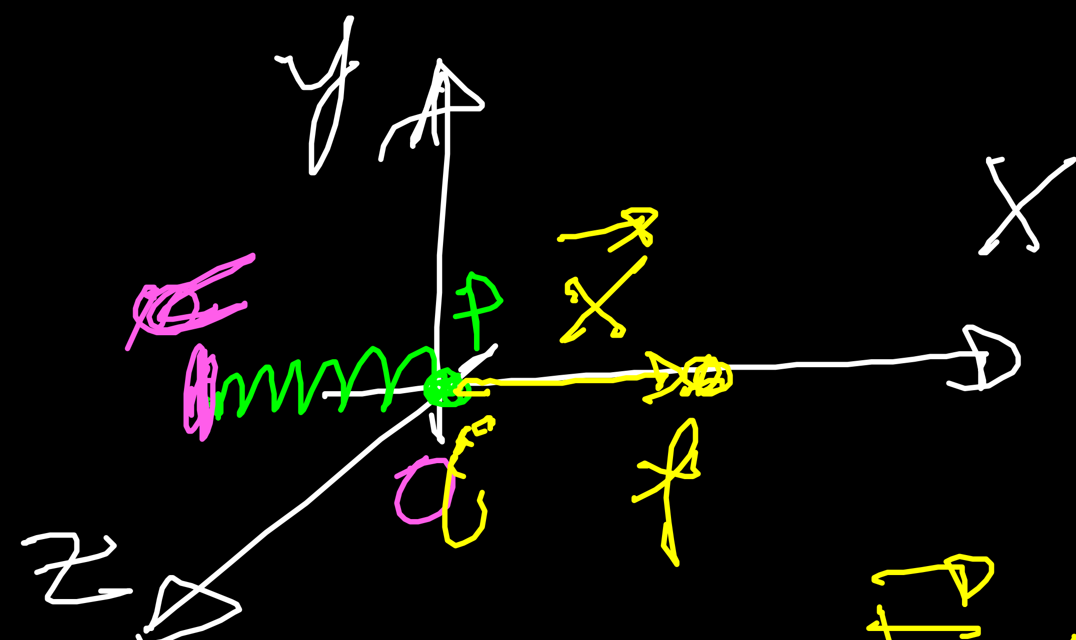


$$\vec F(\vec r) \equiv (0, -mg, 0)$$

$$\mathcal{L}_{i\to f,\gamma} = -mg(y_f - y_i)$$

$$= -mgh$$ INDIP. DA γ

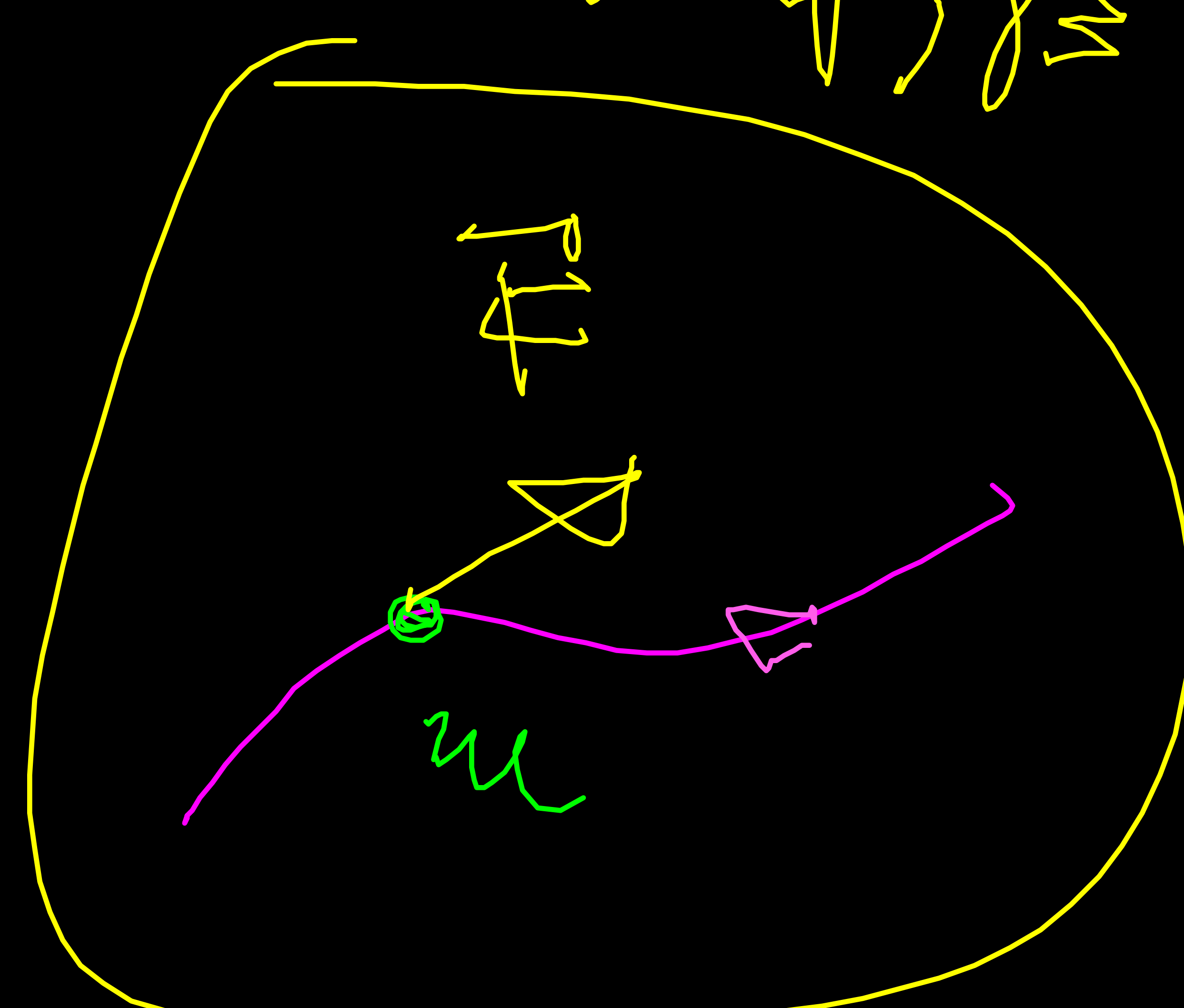
ES. FORZA ELASTICA



$$\vec{F}_{el}(\vec{r}) \equiv (-Kx, 0, 0)$$

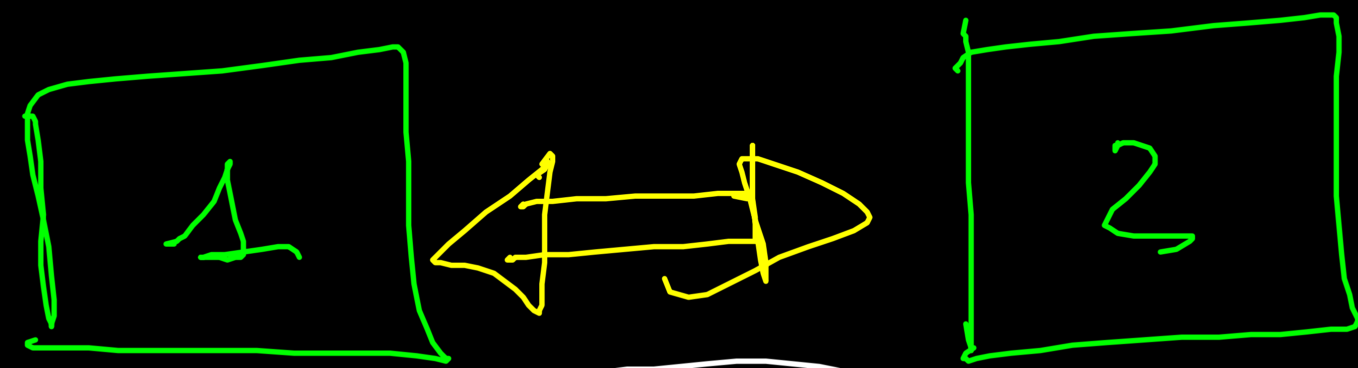
$$\vec{F}(\vec{r}) \cdot d\vec{r} = F_x\,dx + \cancel{F_y\,dy} + \cancel{F_z\,dz} = -Kx\,dx$$

$$\mathcal{L}_{i \to f,\ \gamma \equiv \hat{i}} = \int_{x_i}^{x_f} F_x\,dx = -K \int_{x_i}^{x_f} x\,dx = -\frac{K(x_f - x_i)^2}{2}$$



se $x_i = 0 \Rightarrow \mathcal{L} = -\frac{Kx^2}{2}$

allungamento (Δx)

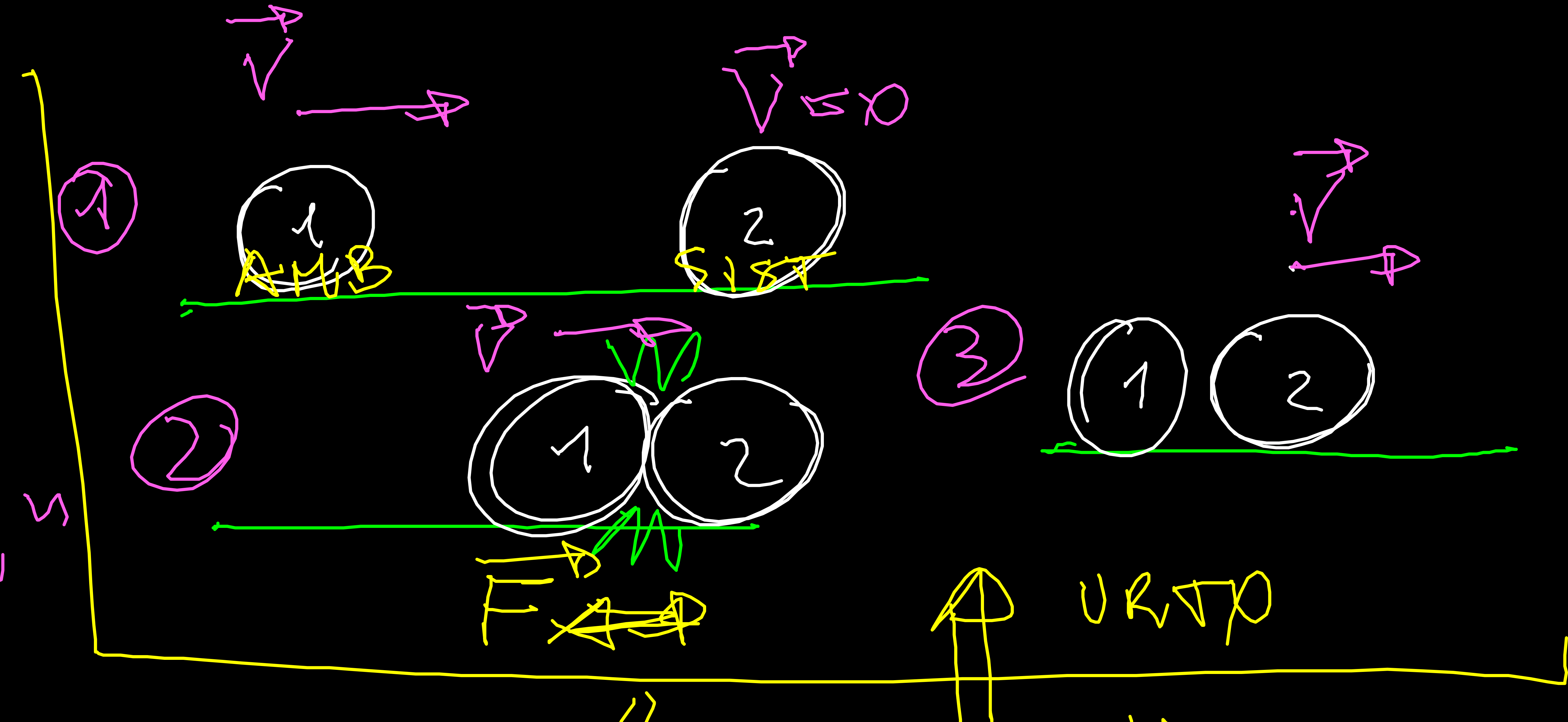


FORZA

"SISTEMA" "AMBIENTE"

f

SPOST.



IL LAVORO TRASFERISCE "ENERGIA"

TRASFORMAZIONE

LAVORO DI UNA FORZA

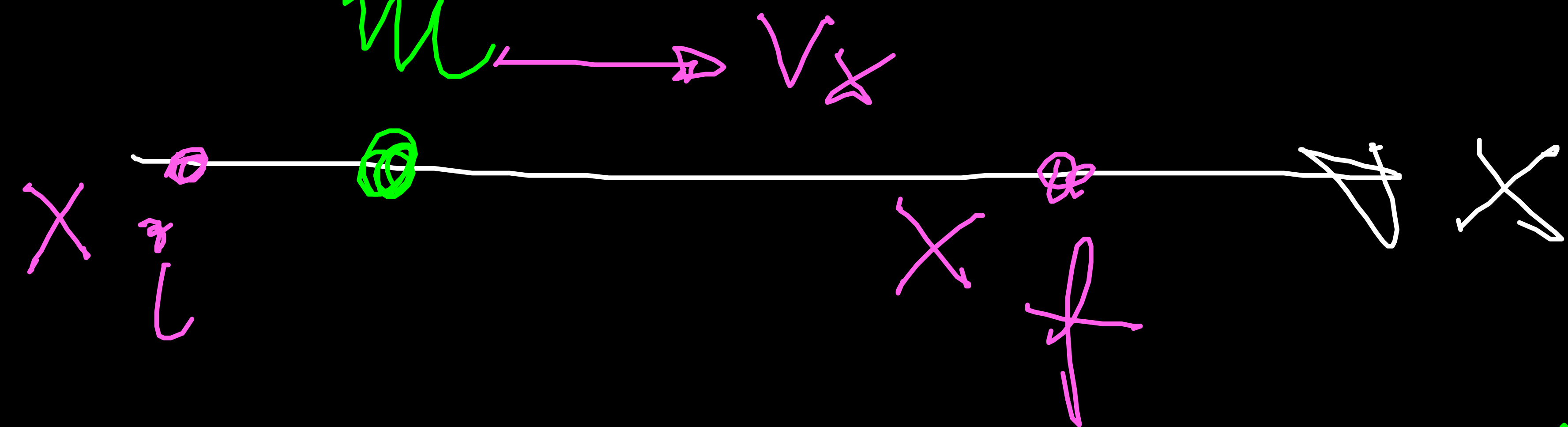
TRASFERIMENTO DI "ENERGIA"

= ENERGIA TRASFERITA

TEOREMA LAVORO – ENERGIA $\Leftrightarrow \vec{F} = m\vec{a}$
(DELL'ENERGIA CINETICA)
(DELLE FORZE VIVE)

CASO UNIDIMENSIONALE CON a_x COSTANTE

a_x costante $\Rightarrow$ MOTO UNIF. ACCELERATO



$$\boxed{v_f^2 - v_i^2 = 2a_x(x_f - x_i)}$$

$$\begin{cases} x_f(t) = x_i + v_i t + \frac{1}{2}a_x t^2 \\ v_f(t) = v_i + a_x t \end{cases}$$

$m \times$

$$m v_f^2 - m v_i^2 = 2 m a_x (x_f - x_i)$$

$$\frac{m}{2} v_f^2 - \frac{m}{2} v_i^2 = m a_x (x_f - x_i) \longrightarrow \text{LAVORO DI } F_x?$$