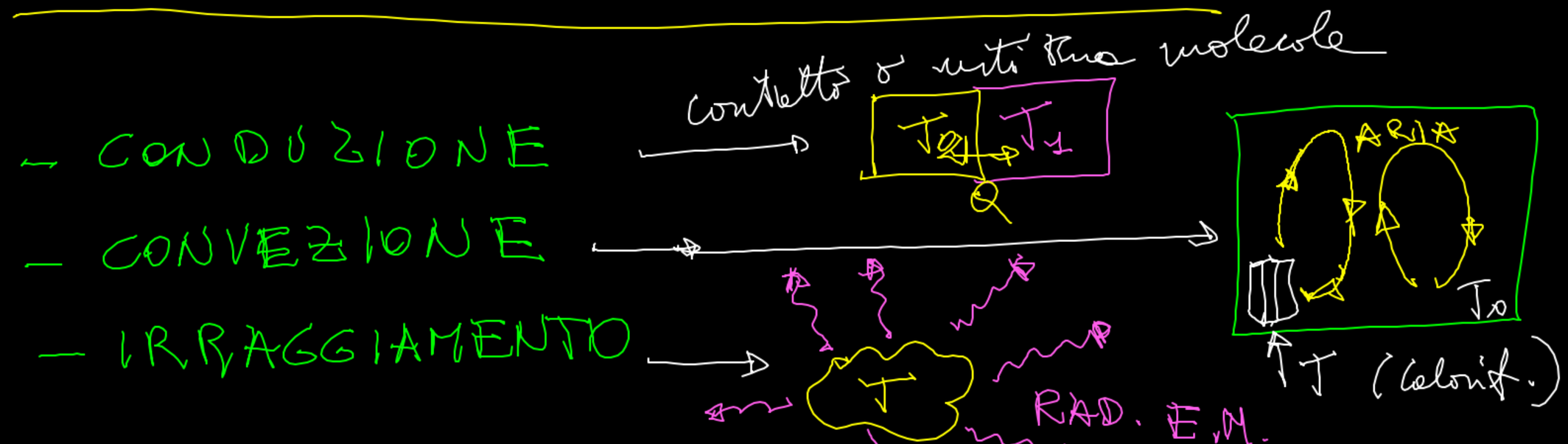
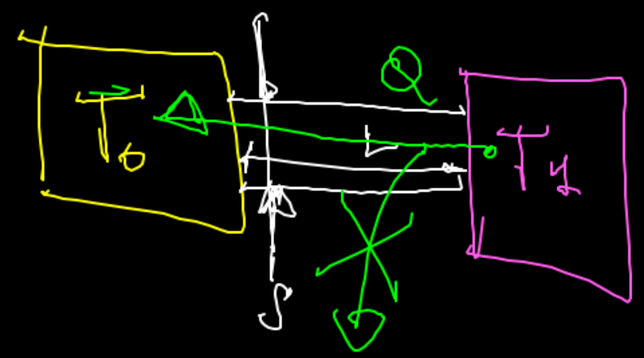
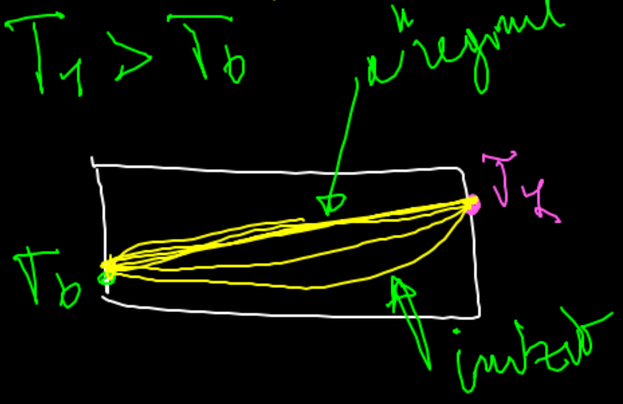
TRASMISSIONE DEL CALORE

- CONDUZIONE
- CONVEZIONE
- IRRAGGIAMENTO



CONDUZIONE (MODELLO)



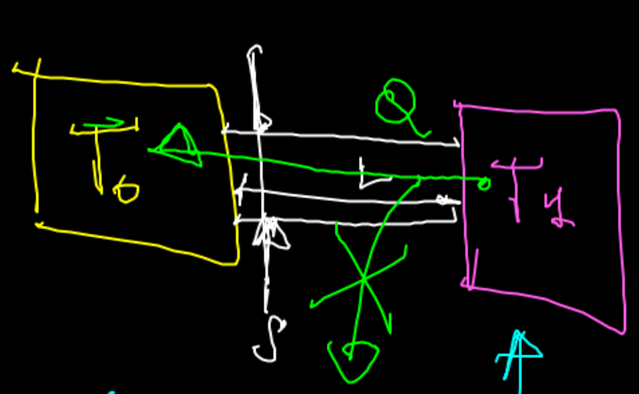


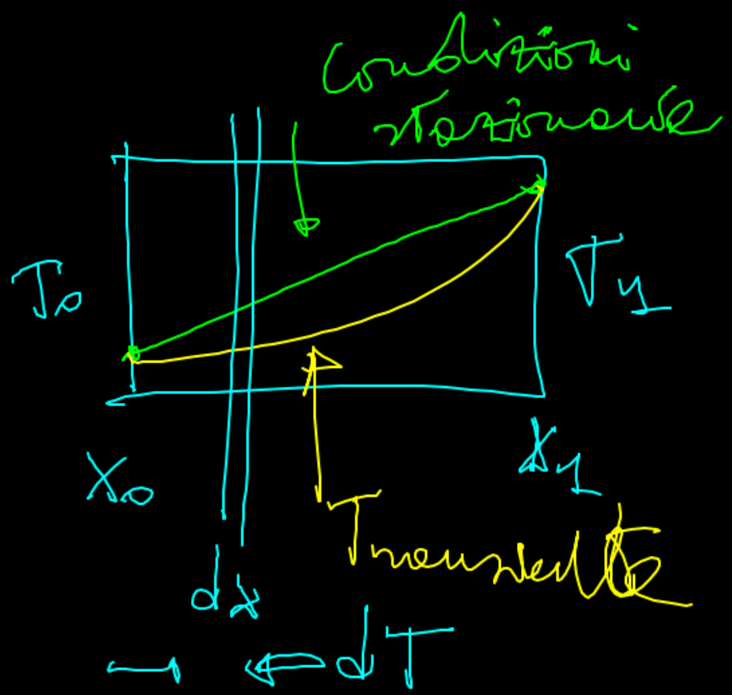
$$\mathcal{P} = \frac{Q}{\Delta t} = K \frac{S \Delta T}{L}$$

$\mathcal{P}$ = W (Watt)

$\mathcal{P}$: corrente termica

K: CONDUC. TERMICA



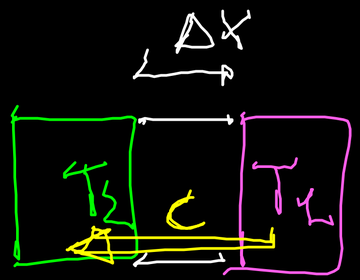


$$C = -KS\frac{dT}{dx}$$

gradient de température

CONDUZIONE IN COND. STAZ.

$$C = \frac{Q}{\Delta t} = \frac{K S}{\Delta X} \Delta T \qquad \Delta T = \frac{\Delta X}{K S} C = \frac{R}{S} C$$



S

$\Delta T = T_1 - T_2$

$T_1 > T_2$

$$R = \frac{\Delta X}{K} \Longrightarrow$$

B.T.U.

British Thermal Unit

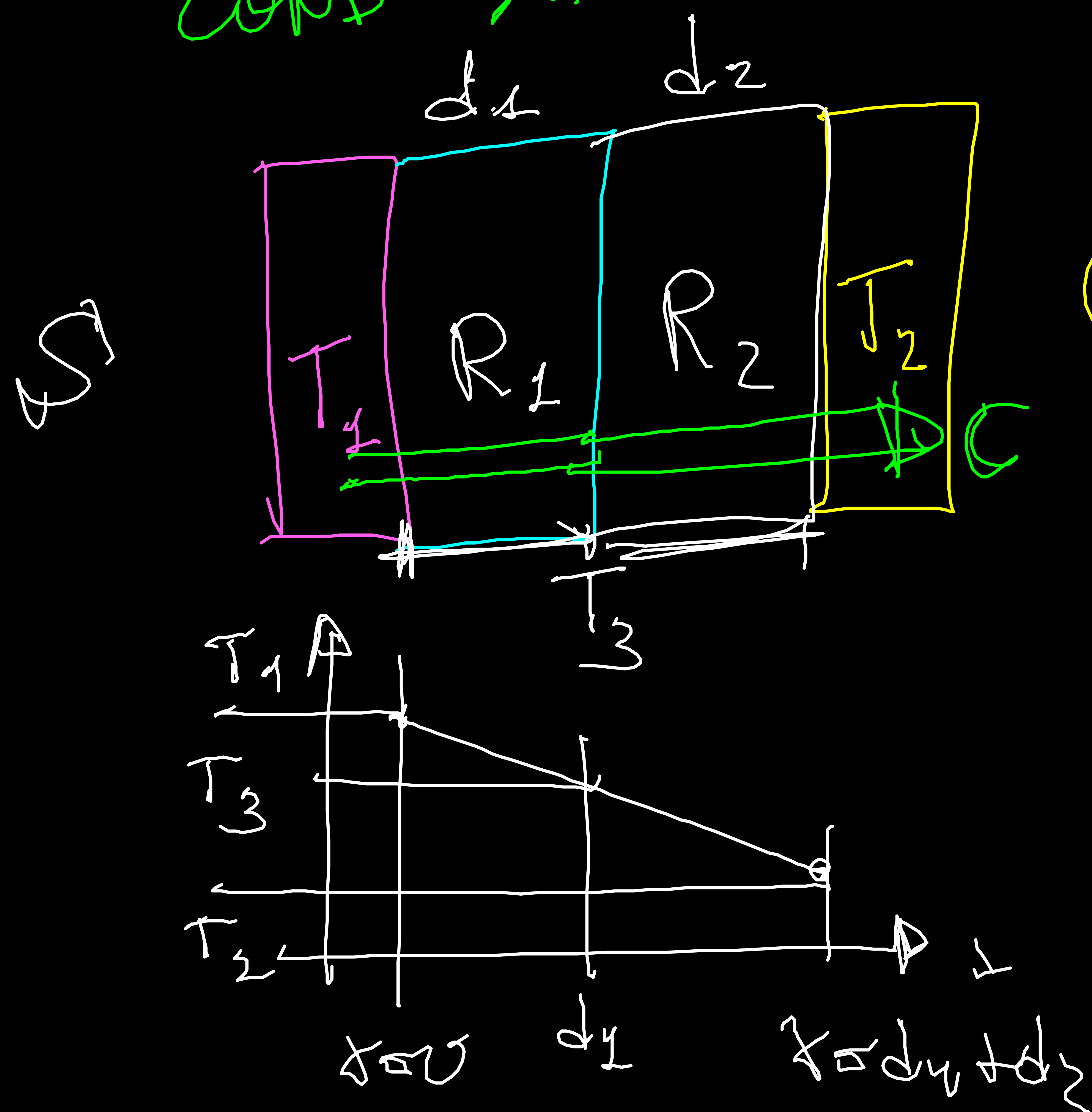
1 BTU = 1055 J

$$[K] = \frac{[W]}{[m][K]}$$

$$[R] = \frac{[m]^2 [K]}{[W]}$$

$$R = \frac{[^\circ F][h][ft]^2}{BTU}$$

COND STAZ.



$$\frac{R\,C}{S} = \Delta T = T_1 - T_2$$

$$R_1 = \frac{d_1}{K_1}$$

$$T_1 - T_3 = \frac{R_1}{S} C$$

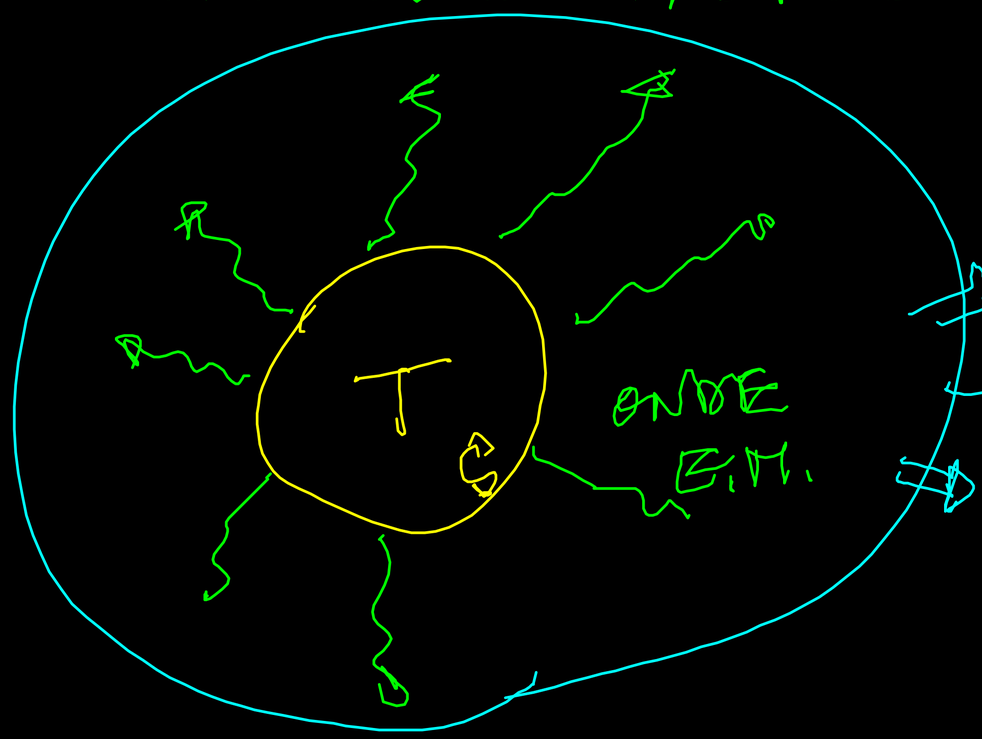
$+$

$$T_3 - T_2 = \frac{R_2}{S} C$$

$$R_2 = \frac{d_2}{K_2}$$

$$T_1 - T_2 = \frac{C}{S}(R_1 + R_2)$$

IRRAGGIAMENTO



$W = [J]$

$P = \sigma \varepsilon S T^4$

ε emittanza $\quad 0 \le \varepsilon \le 1$

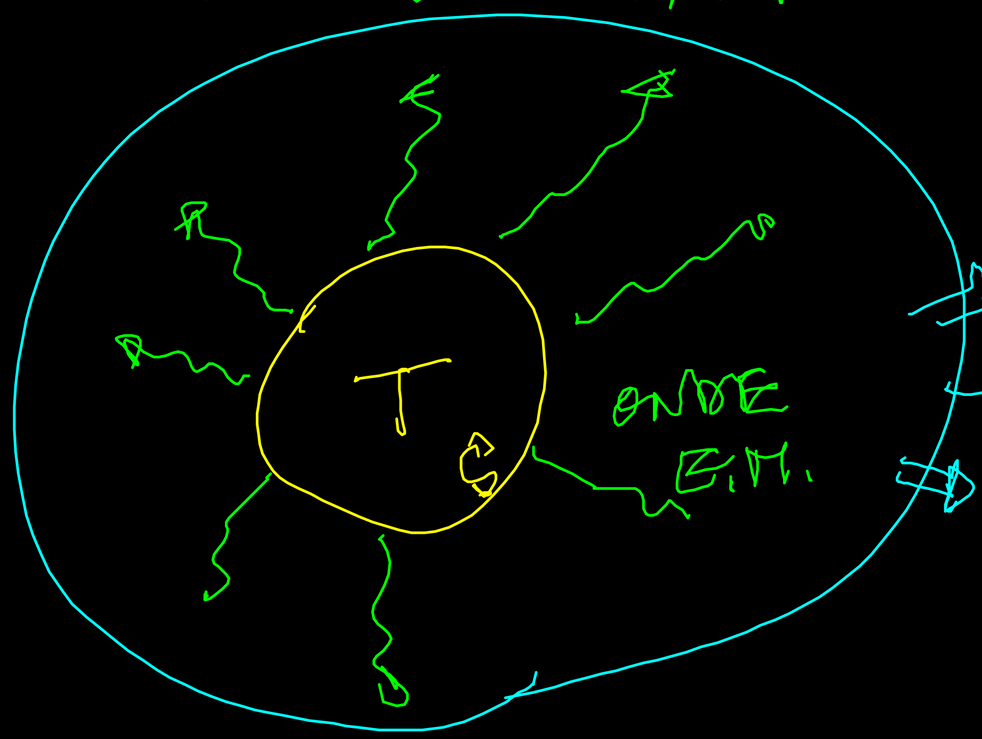
σ costante di Stefan-Boltzmann

$\sigma = 5{,}67 \times 10^{-8} \ \frac{W}{m^2 K^4}$

SPETTRO ONDE EM

λ	NOME
400-700 nm	LUCE VISIBILE
> 700 nm	IR — MW — RF
< 400 nm	UV, X, γ

IRRAGGIAMENTO



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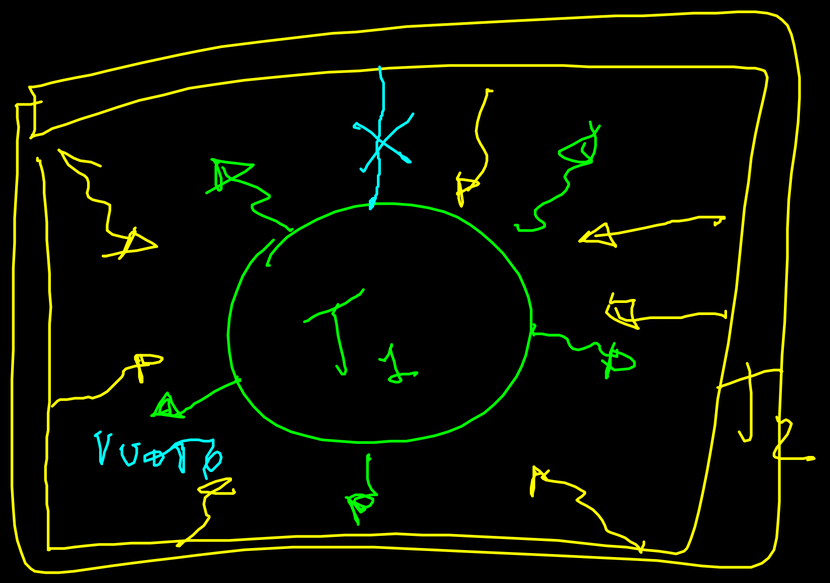
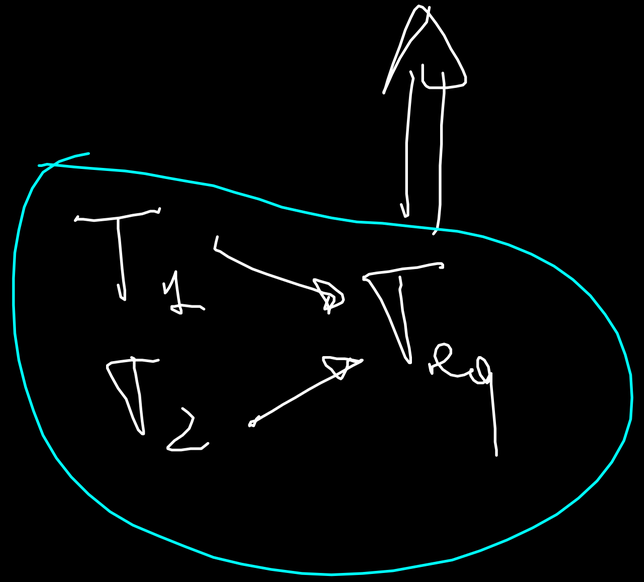


ε emittenza = assorbenza

ε

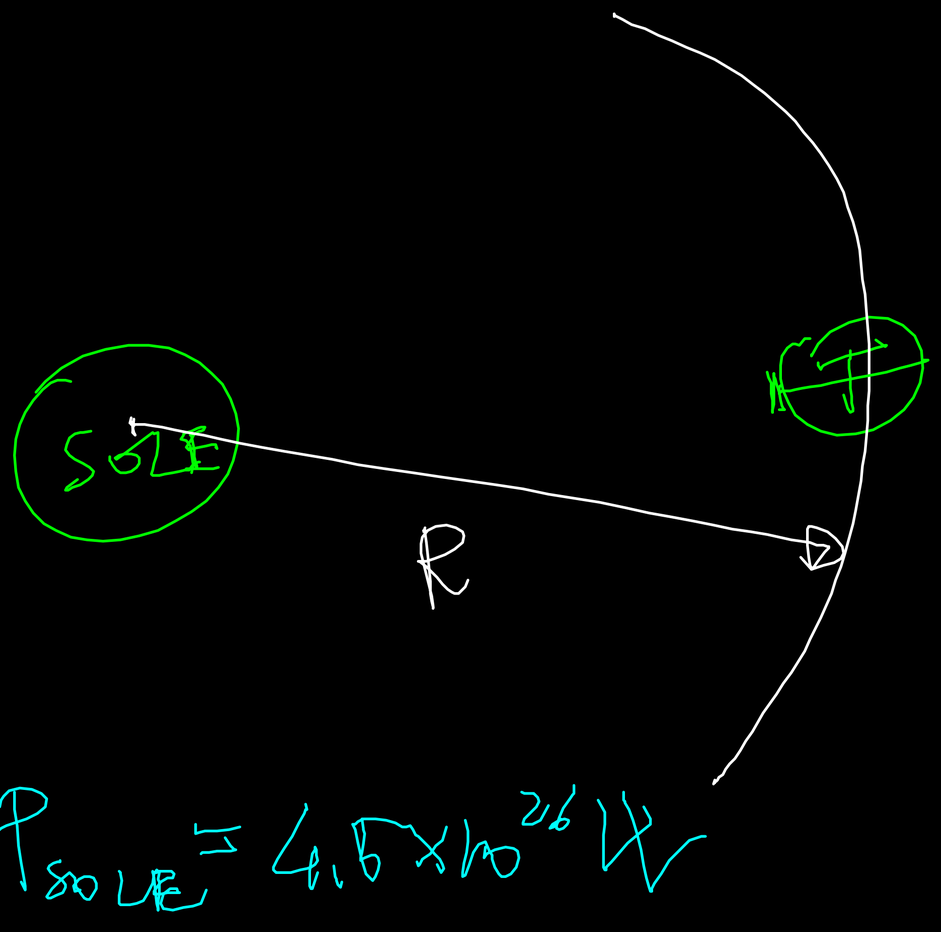
$T_1 \neq T_2$

Specimen.



Corpo "NERO"

$\varepsilon \simeq 1$



$$I = \frac{P_{SOLE}}{4\pi R^2} \qquad \frac{W}{m^2}$$

$$P_{SOLE} = 4{,}6 \times 10^{26}\ W$$

$$I = 1600\ \frac{W}{m^2}$$