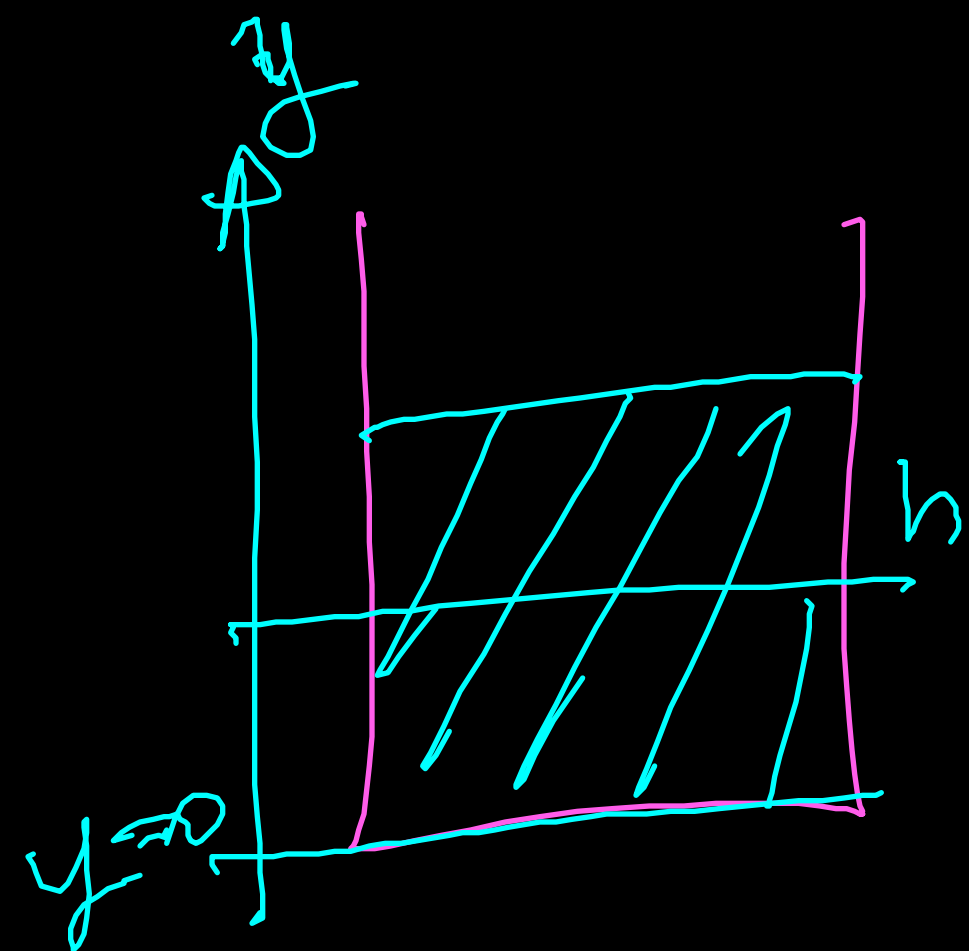


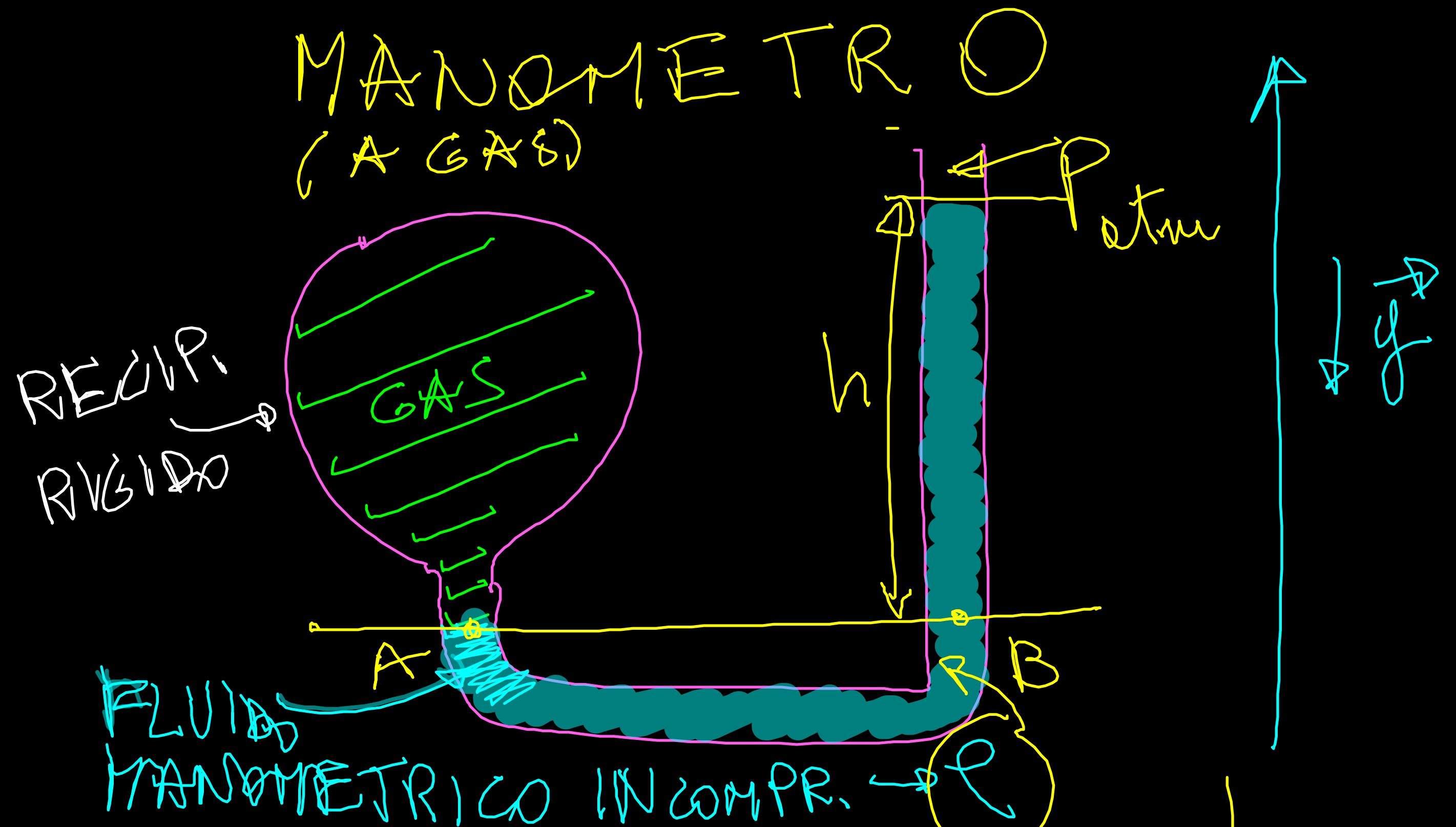
ELEMENTI DI FLUIDOSTATICA



VARIAZIONE DELLA PRESS. CON L'ALTEZZA

$$dp = -\rho g dy$$

Se incomp. $\rho = \text{cost}$



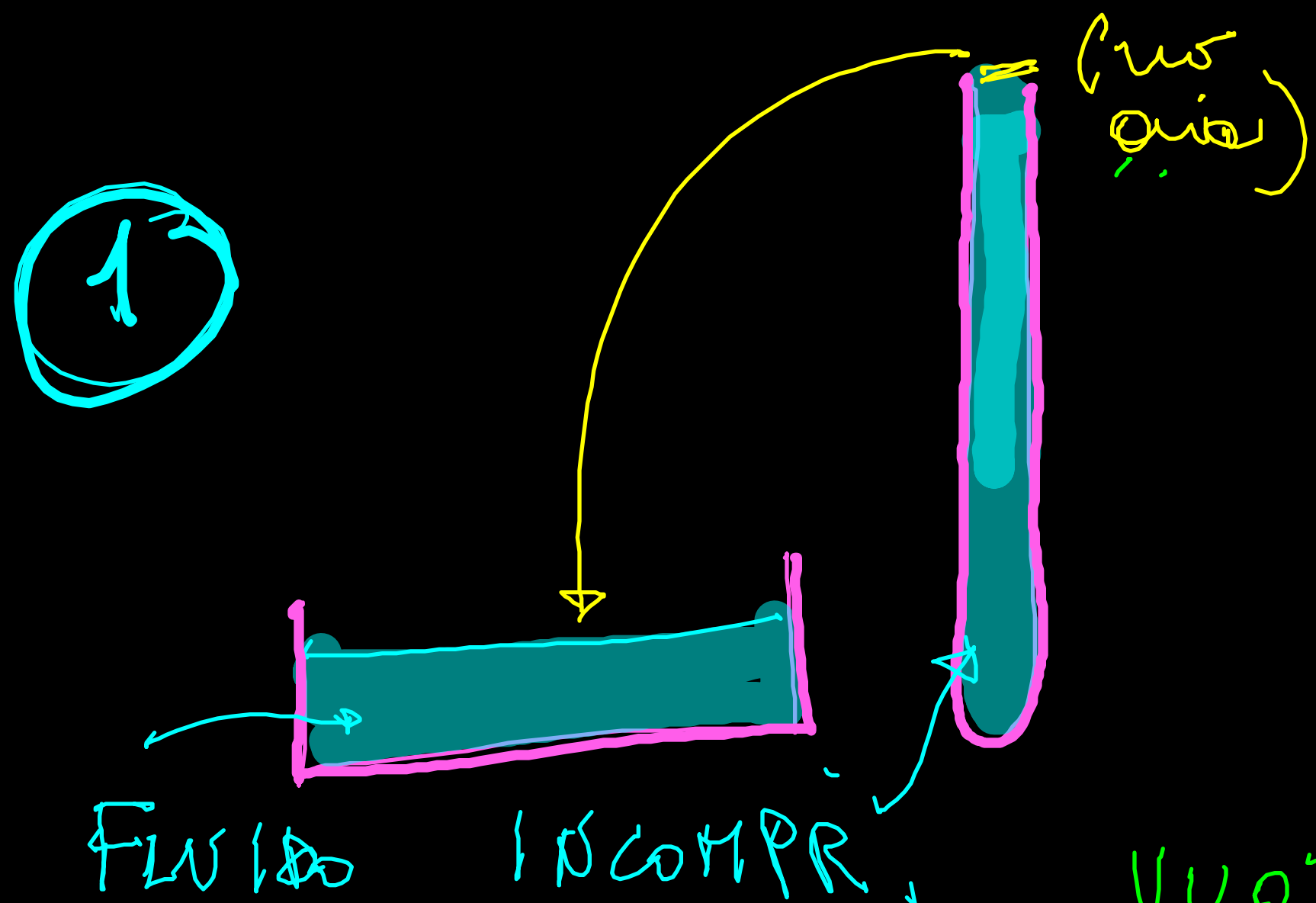
$$P_A = P_{\text{GAS}} = P_B = P_{\text{atm}} + \rho g h$$

Pressione assoluta

$$P_r = P_B - P_{\text{atm}} = \rho g h$$

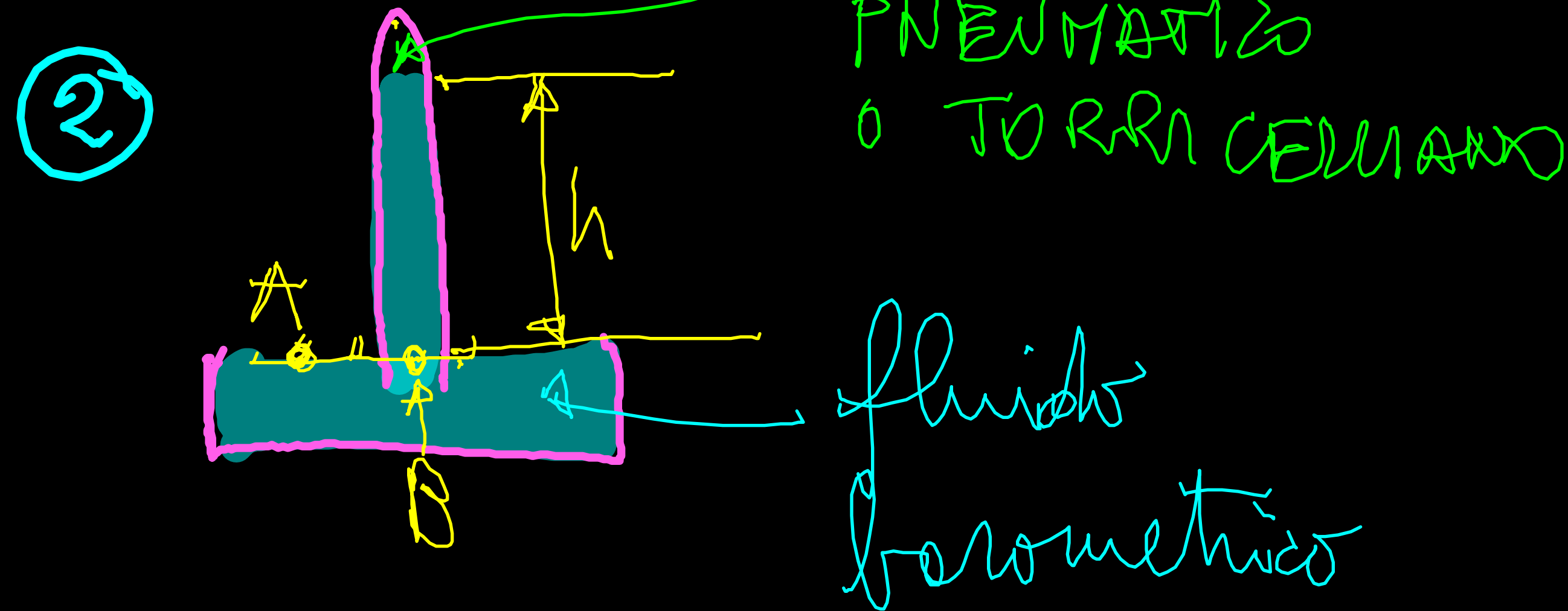
P_r pressione relativa

BAROMETRO DI TORRICELLI



$$P_A = P_B \quad (\text{all'equilibrio})$$

$$P_A = P_{ATM} = \rho_{\text{fluido}} g h$$



MERCURIO [Hg]
 $h_{Hg} = 760 \text{ mm}$

$$\frac{\rho_{Hg}}{\rho_{H_2O}} = 13.6$$

$$h_{H_2O} = (13.6)(0.76) = 10 \text{ m}$$

UNITA' DI MISURA DELLA P

$$P_{\text{ATM}} \text{ (liv. del mare)} = 760 \text{ mm Hg} = 760 \text{ Torr}$$

$T = 300 \text{ K}$
(NON S.I.)

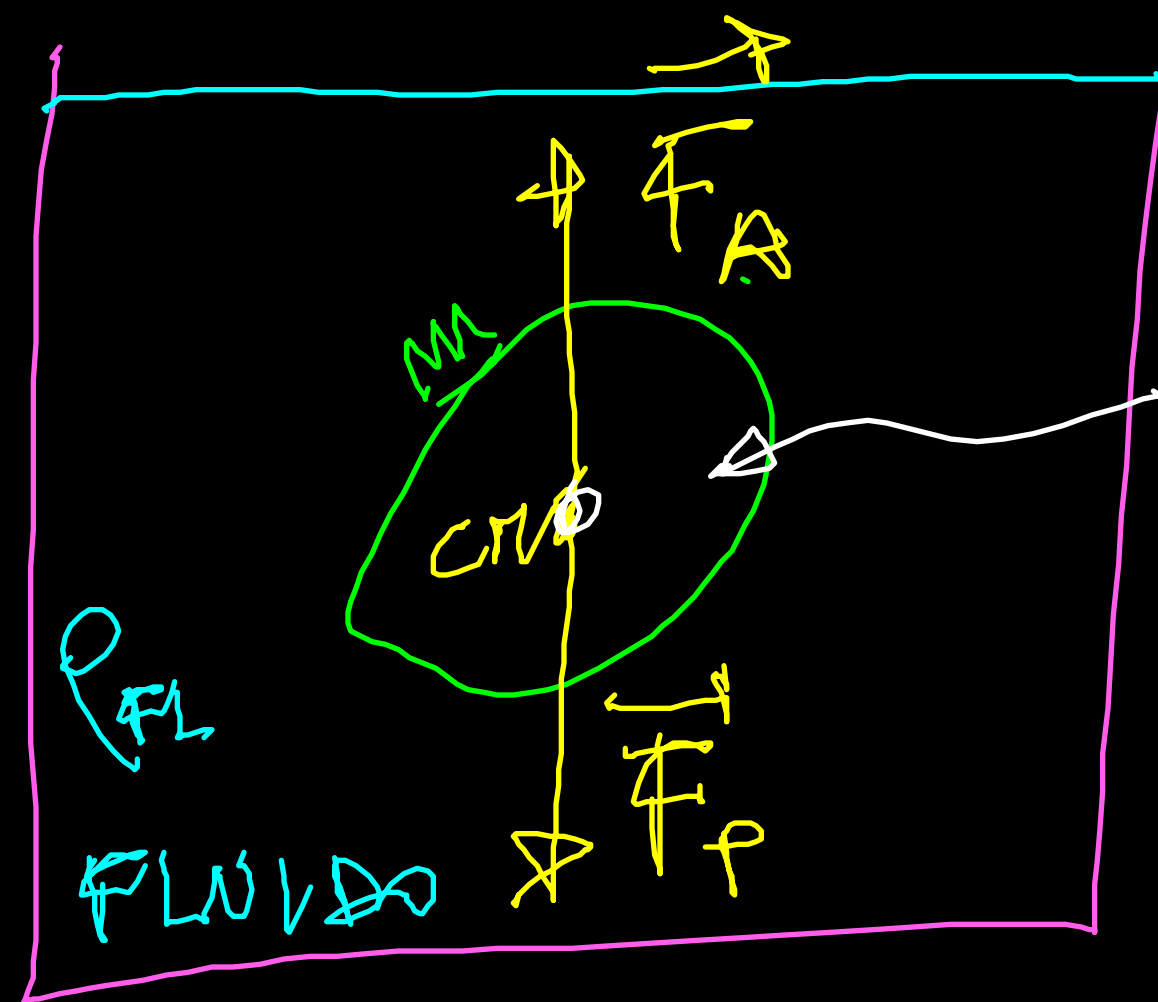
$$1 \text{ bar} = 10^5 \frac{\text{N}}{\text{m}^2}$$

$$\overset{\text{S.I.}}{\underbrace{101300 \frac{\text{N}}{\text{m}^2}}_{\text{S.I.}}} = 101300 \text{ Pa}$$

$$P_{\text{ATM}} = 1013 \text{ mBar}$$

$$1 \frac{\text{N}}{\text{m}^2} = 1 \text{ Pascal}$$

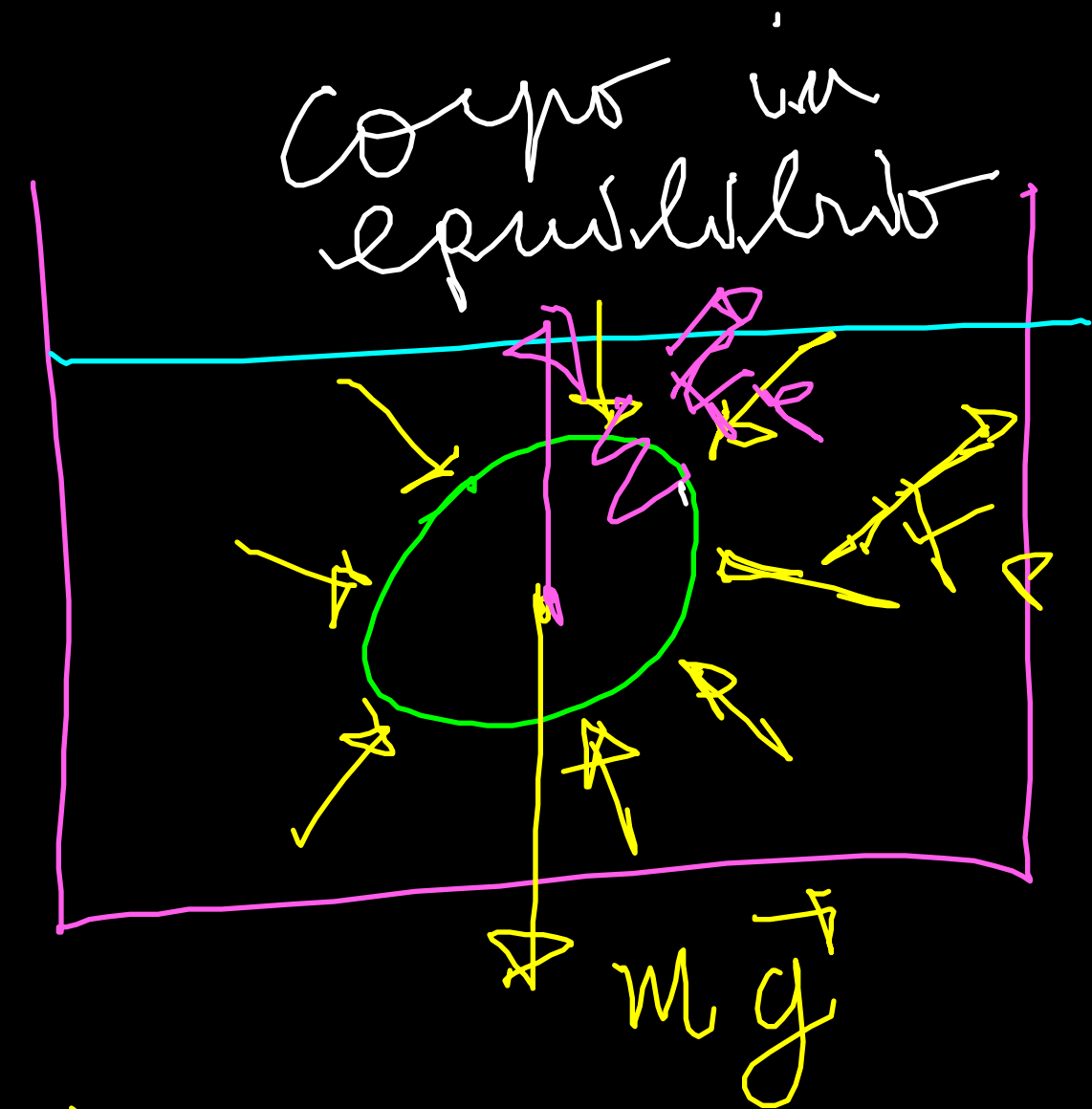
PRINCIPIO DI ARCHIMEDE



Corpo immerso di

Volume V

N.B IN GENERE
 $F_A \neq F_P$



$$F_A = \rho_{\text{FLUIDO}} g V$$

↑ "SPINTA DI ARCHIMEDE"
 (APPL. AL CM)
 $F_P = mg$

All'eq. $\sum \vec{F}_p = mg \vec{p}$
 $\parallel \vec{F}_A$

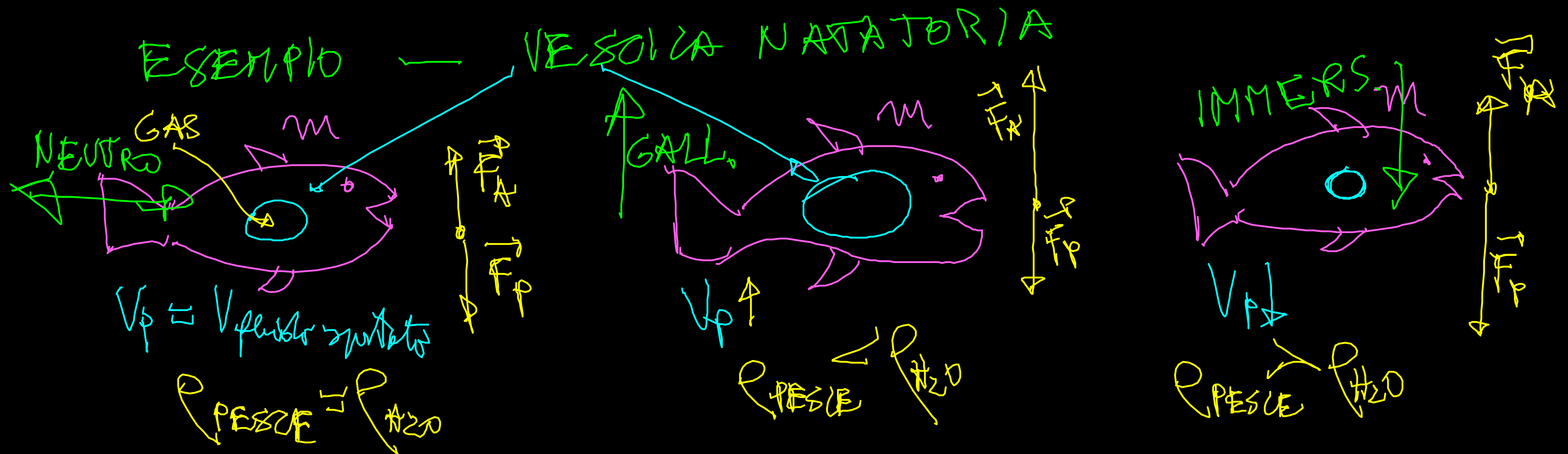
$$F_P = \rho_{\text{CORPO}} g V$$

$$F_A = \rho_{\text{FLUIDO}} g V$$

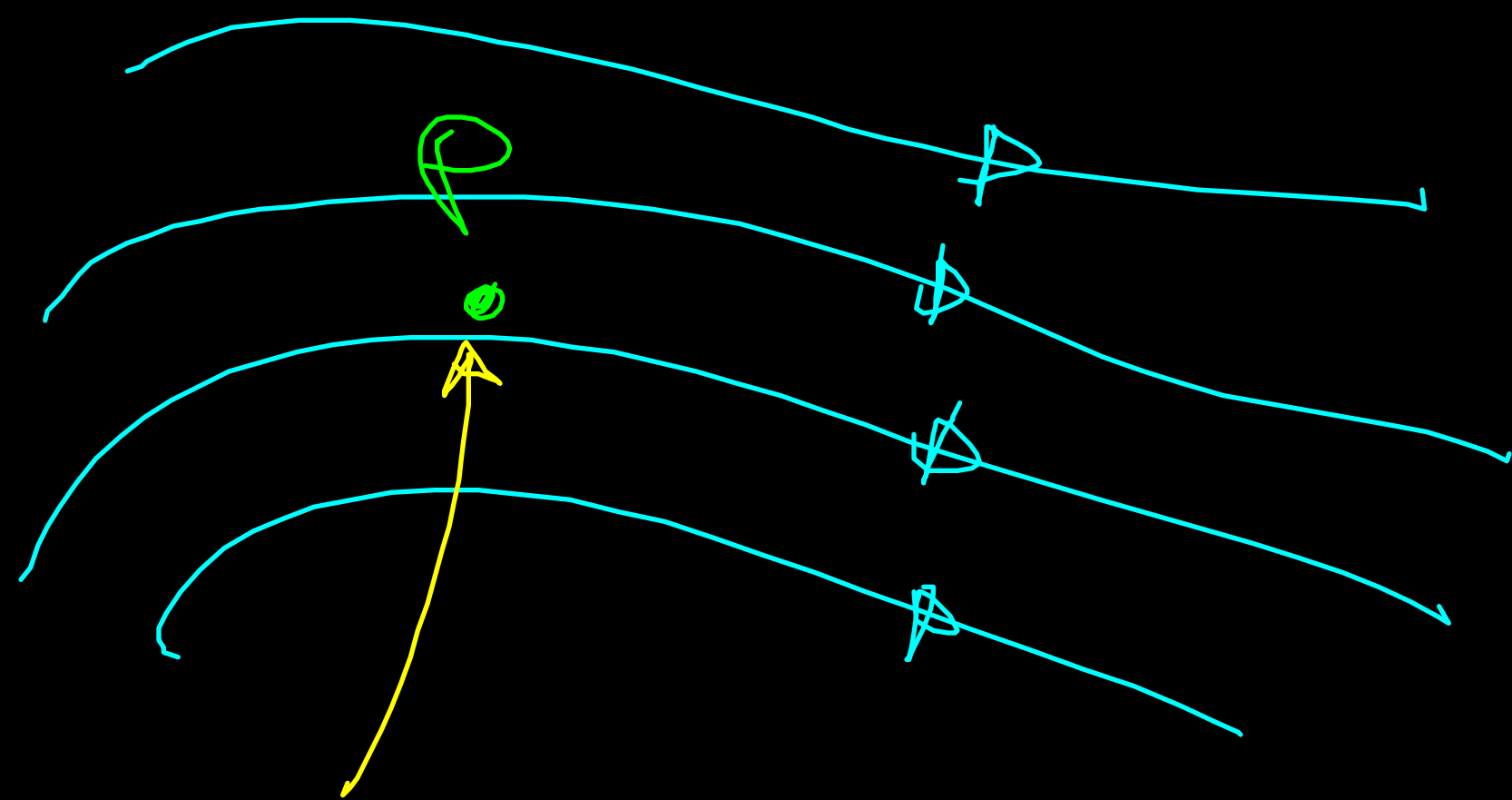
$\rho_{\text{corpo}} = \rho_{\text{fluido}} \rightarrow$ Neutro

$\rho_{\text{corpo}} > \rho_{\text{fluido}} \rightarrow$ Affondamento

$\rho_{\text{corpo}} < \rho_{\text{fluido}} \rightarrow$ Galleggiamento



FLUIDI IN MOVIMENTO (FLUIDODINAMICA)



Pressione P
Densità ρ
Velocità \vec{v}

P, ρ, \vec{v} variano nel tempo

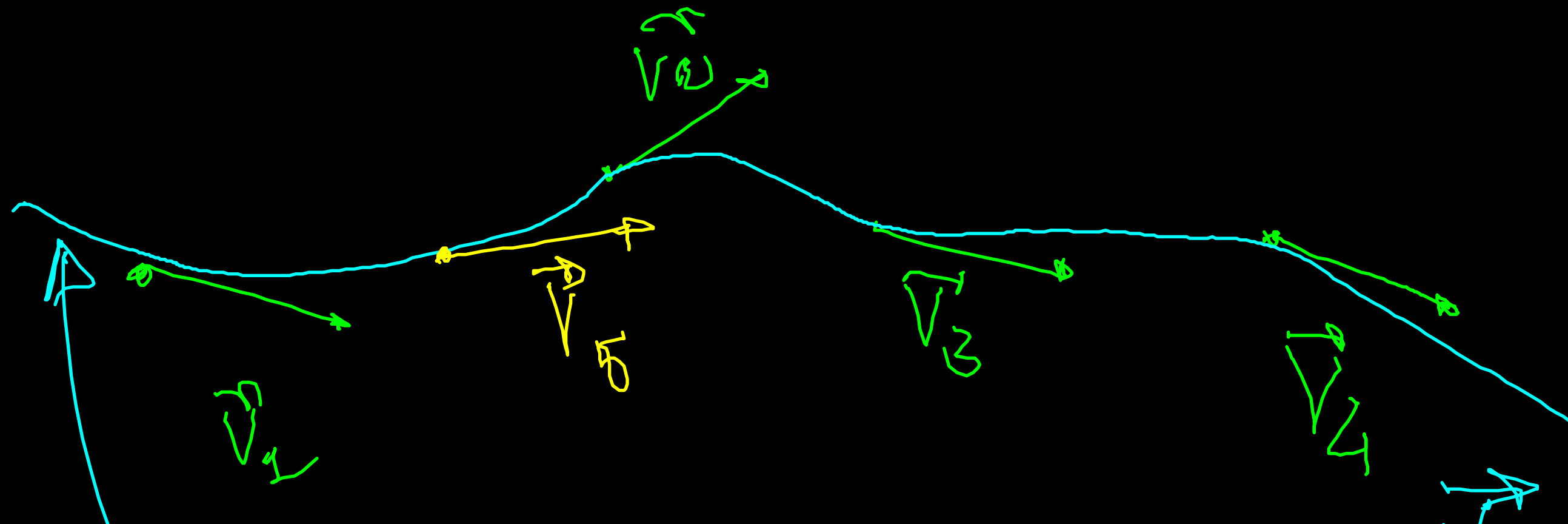
\Rightarrow FLUSSO TURBOLENTO

Esempio: scarico di una vasca

P, ρ, \vec{v} variano da punto a punto, ma sono costanti nel tempo

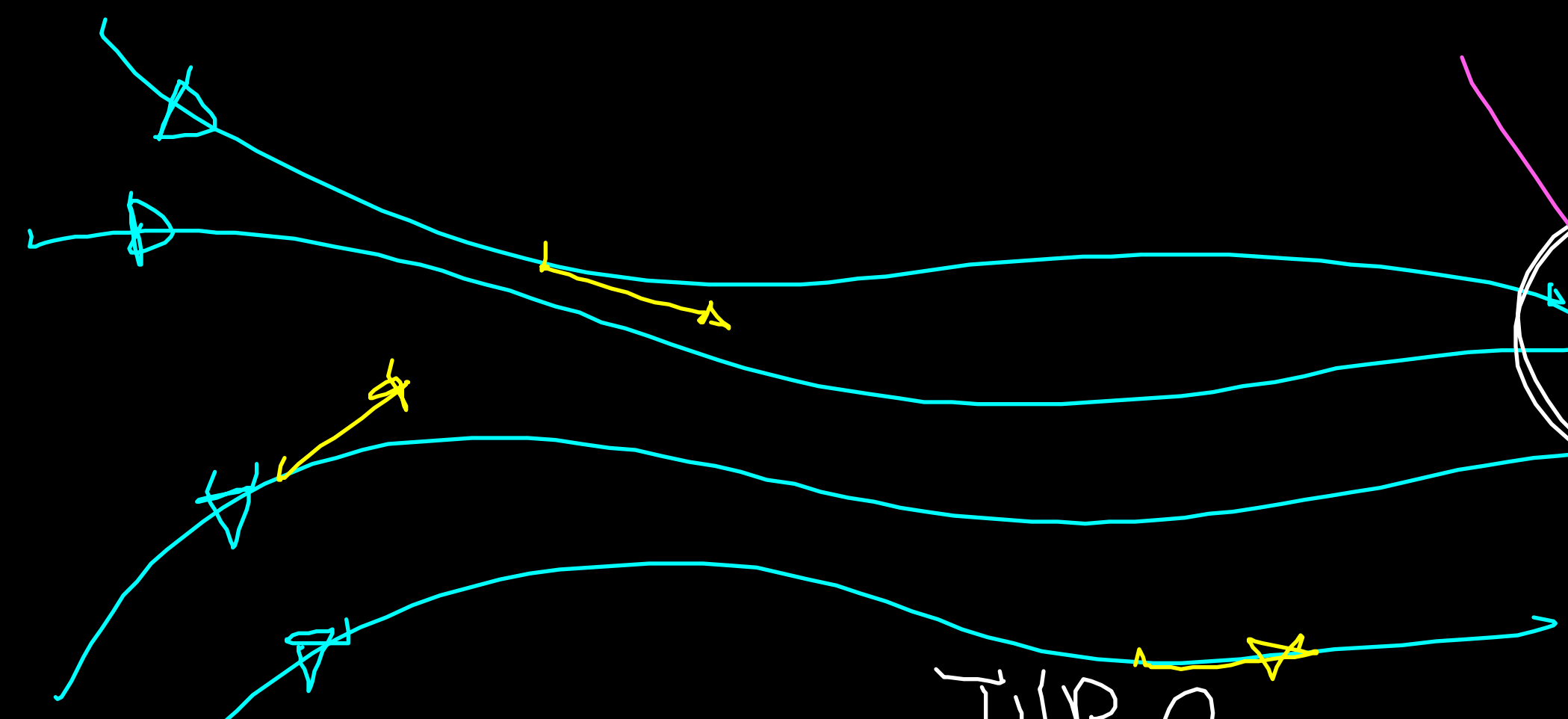
\Rightarrow FLUSSO STAZIONARIO

FLUIDO IN FLUSSO STAZIONARIO

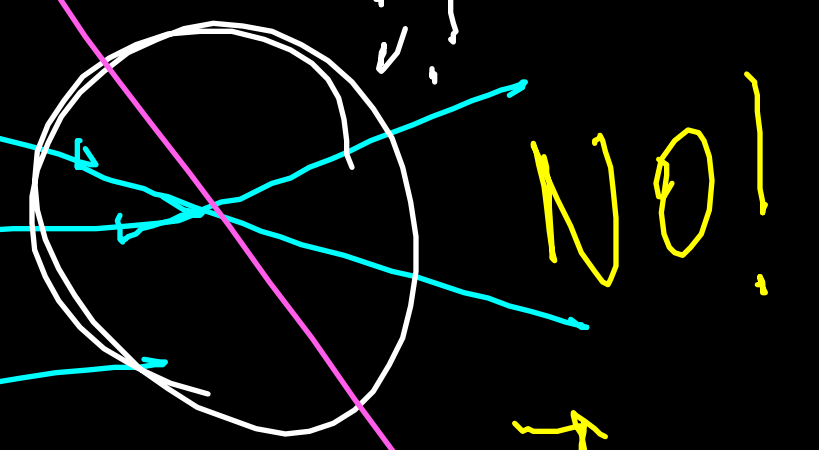


LINEA DI FLUSSO

Fluido è tangente alla
linea di flusso \forall punto



FASCIO DI LINEE → TUBO
DI FLUSSO



NO! Le linee di flusso
non si possono
intersecare

