

## A1. ANALIZA DIMENSIONALA A UNOR MARIMI FIZICE DERIVATE

Marimile fizice fundamentale sunt:

Nr. crt.	Marime fizica	Simbolul marimii fizice	Simbolul dimensiunii marimii fizice	Unitatea de masura	Simbolul unitatii de masura
1	Lungime	$l$	L	metrul	m
2	Masa	$m$	M	kilogramul	kg
3	Timp	$t$	T	secunda	s
4	Temperatura	$T$	$\theta$	kelvinul	K
5	Curent electric	$I$	I	amper	A
6	Cantitate de substanta	$n$	n	mol	mol
7	Intensitate luminoasa	$I_v$	$I_v$	Candela	cd

Analiza dimensionala a unor marimi fizice derivate:

$$\langle A \rangle = \langle l \rangle \cdot \langle l \rangle = \langle l \rangle^2 = L^2 \quad \text{U.M.: [m}^2\text{]} \quad \textit{suprafata}$$

$$\langle V \rangle = \langle l \rangle \cdot \langle l \rangle \cdot \langle l \rangle = \langle l \rangle^3 = L^3 \quad \text{U.M.: [m}^3\text{]} \quad \textit{volum}$$

$$\langle \rho \rangle = \frac{\langle m \rangle}{\langle V \rangle} = \frac{\langle m \rangle}{\langle l \rangle^3} = \frac{M}{L^3} \quad \text{U.M.: [kg/m}^3\text{]} \quad \textit{densitate}$$

$$\langle v \rangle = \frac{\langle l \rangle}{\langle t \rangle} = \frac{L}{T} \quad \text{U.M.: [m/s]} \quad \textit{viteza}$$

$$\langle a \rangle = \frac{\langle v \rangle}{\langle t \rangle} = \frac{\langle l \rangle}{\langle t \rangle \cdot \langle t \rangle} = \frac{L}{T^2} \quad \text{U.M.: [m/s}^2\text{]} \quad \textit{acceleratie}$$

$$\langle F \rangle = \langle m \rangle \cdot \langle a \rangle = \langle m \rangle \cdot \frac{\langle v \rangle}{\langle t \rangle} = \langle m \rangle \cdot \frac{\langle l \rangle}{\langle t \rangle^2} = M \cdot \frac{L}{T^2}$$

U.M.:  $\left[ kg \cdot \frac{m}{s^2} \right]$  (Newton) *forta*

$$\langle \gamma \rangle = \frac{\langle G \rangle}{\langle V \rangle} = \frac{\langle m \rangle \cdot \langle a \rangle}{\langle V \rangle} = \frac{\langle m \rangle \cdot \langle v \rangle}{\langle l \rangle^3 \cdot \langle t \rangle} = \frac{\langle m \rangle \cdot \langle l \rangle}{\langle l \rangle^3 \cdot \langle t \rangle^2} = \frac{M}{L^2 \cdot T^2}$$

$$\text{U.M.: } \left[ \frac{\text{kg}}{\text{m}^2 \cdot \text{s}^2} \right]$$

**greutate volumica**

$$\langle P \rangle = \frac{\langle F \rangle}{\langle A \rangle} = \frac{\langle m \rangle \cdot \langle a \rangle}{\langle A \rangle} = \frac{\langle m \rangle \cdot \langle v \rangle}{\langle l \rangle^2 \cdot \langle t \rangle} = \frac{\langle m \rangle \cdot \langle l \rangle}{\langle l \rangle^2 \cdot \langle t \rangle^2} = \frac{M}{L \cdot T^2}$$

$$\text{U.M.: } \left[ \frac{\text{kg}}{\text{m} \cdot \text{s}^2} \right]$$

(Pascal)

**presiune**

$$\langle E_p \rangle = \langle m \rangle \cdot \langle g \rangle \cdot \langle h \rangle = \langle m \rangle \cdot \frac{\langle v \rangle}{\langle t \rangle} \cdot \langle l \rangle = \langle m \rangle \cdot \frac{\langle l \rangle}{\langle t \rangle^2} \cdot \langle l \rangle = M \cdot \frac{L^2}{T^2}$$

$$\text{U.M.: } \left[ \text{kg} \cdot \frac{\text{m}^2}{\text{s}^2} \right]$$

(Joule)

**energie potentiala**

$$\langle E_c \rangle = \frac{\langle m \rangle \cdot \langle v \rangle^2}{\langle 2 \rangle} \cdot \langle l \rangle = \langle m \rangle \cdot \frac{\langle l \rangle^2}{\langle t \rangle^2} = M \cdot \frac{L^2}{T^2}$$

$$\text{U.M.: } \left[ \text{kg} \cdot \frac{\text{m}^2}{\text{s}^2} \right]$$

(Joule)

**energie cinetica**