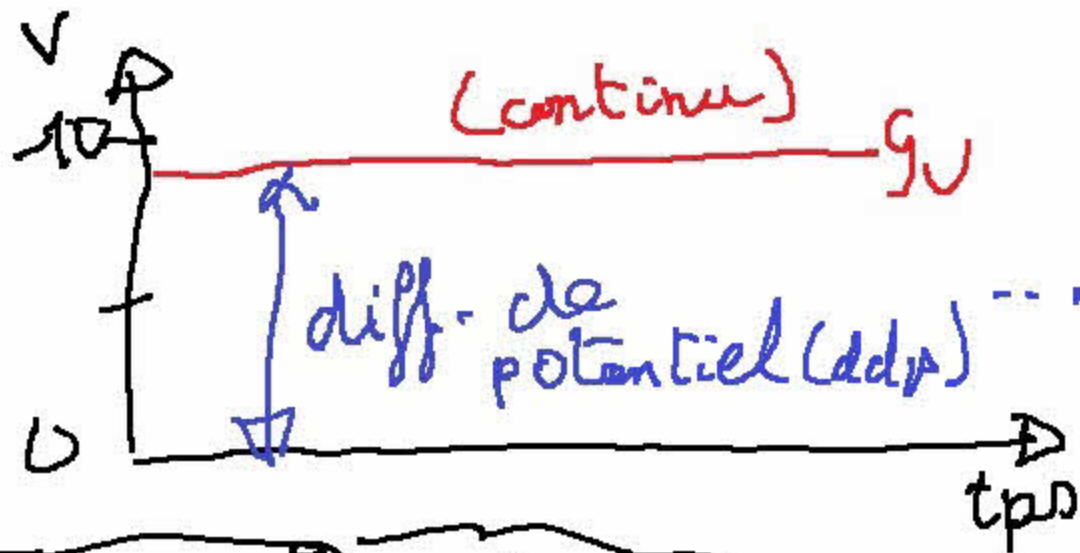
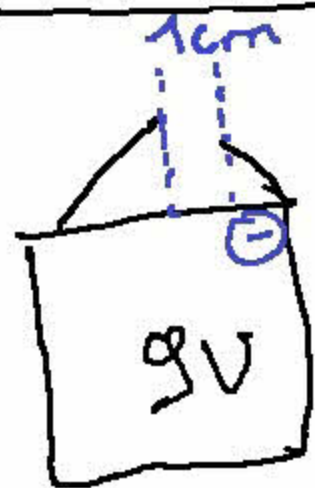


I - Problematique

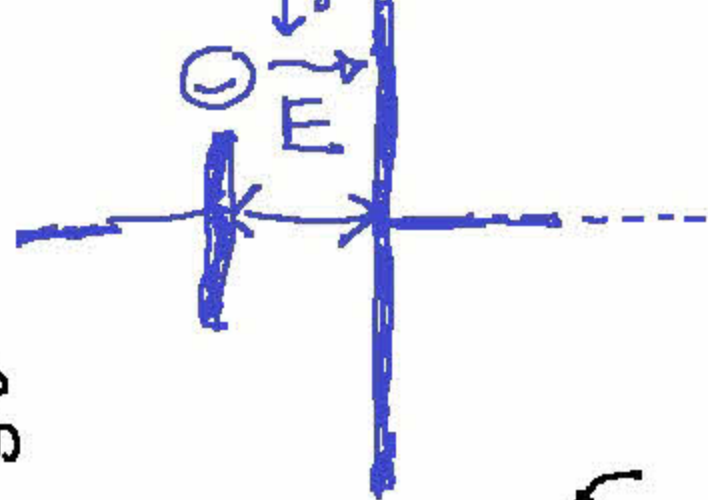
wifi, bluetooth.



## II - Champ Electrique



Champ électrique

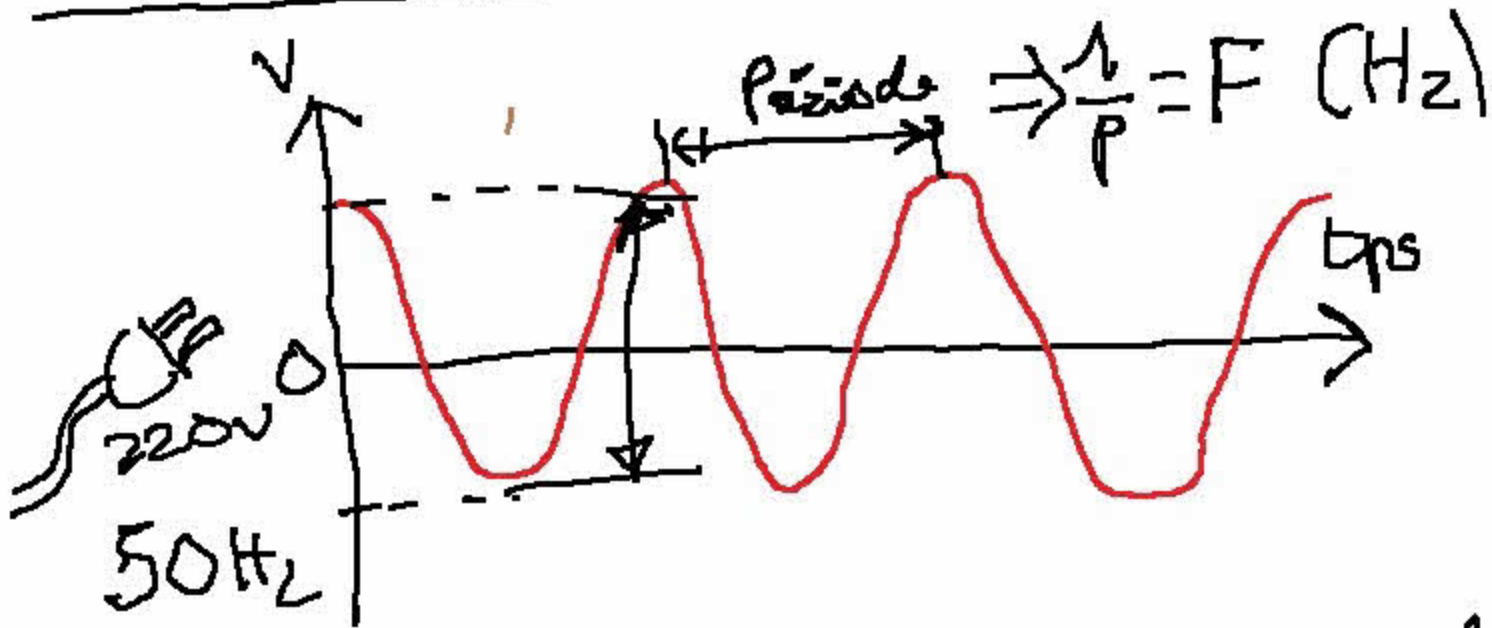


Cas de l'éclair

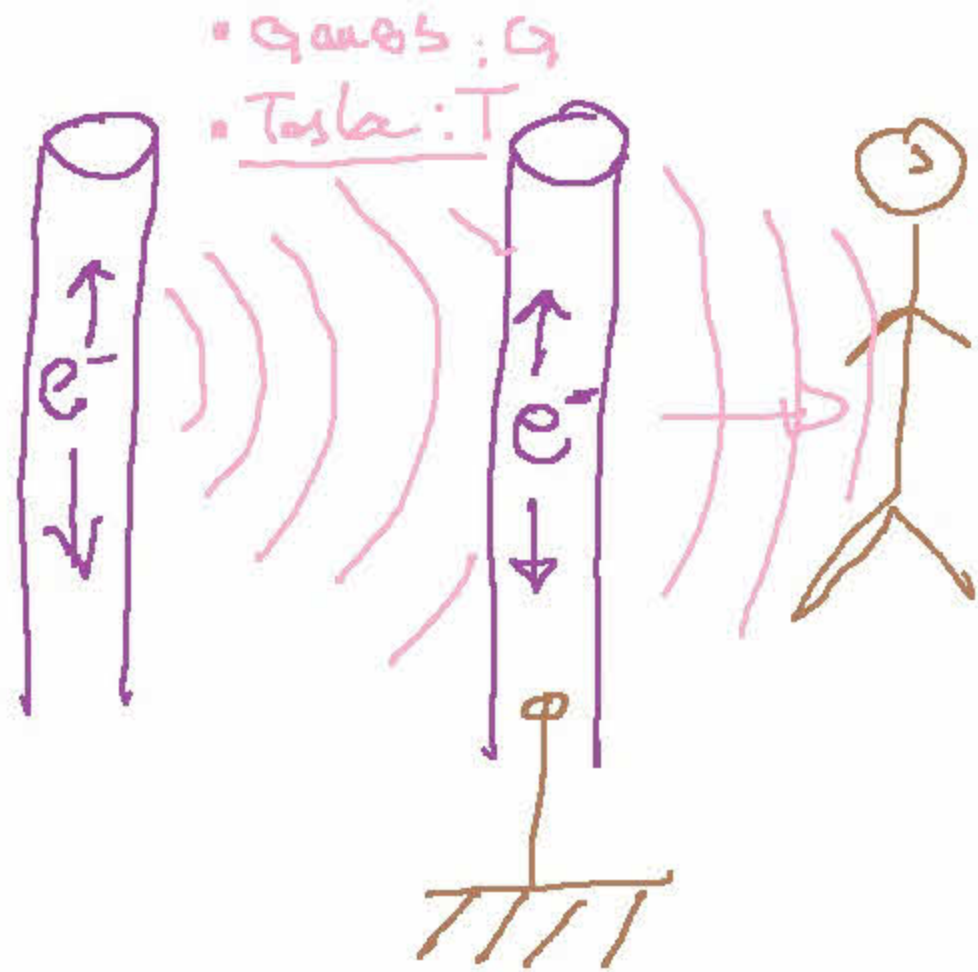


$$ddp = 10 - 200 \cdot 10^6 \text{ V}$$
$$E = 10^6 - 10^5 \text{ V/m}$$




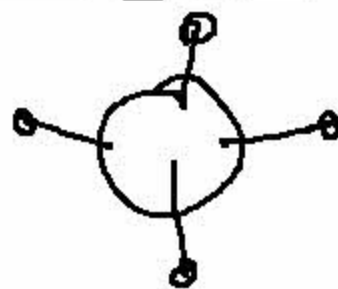
# III - Champ Electromagnetique



$$\lambda = \frac{\text{vitesse lumière } (c)}{F}$$

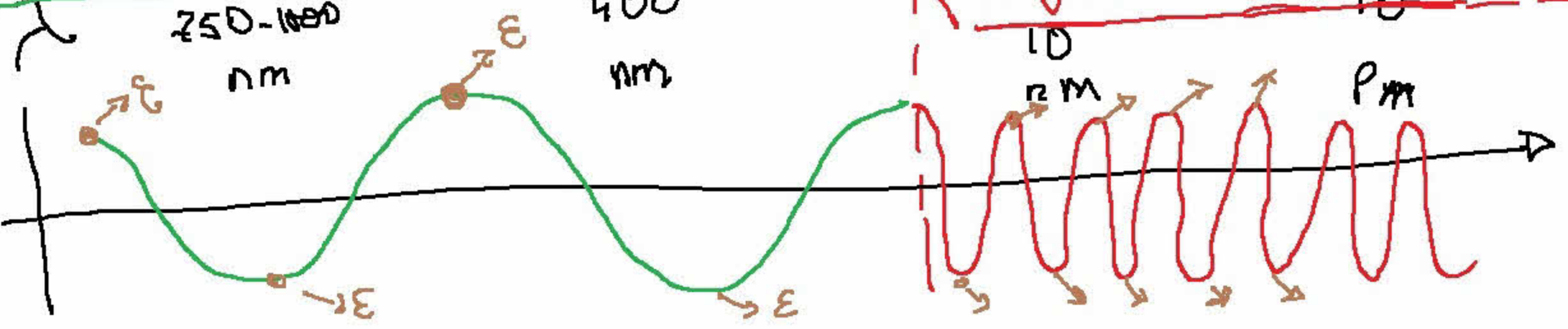
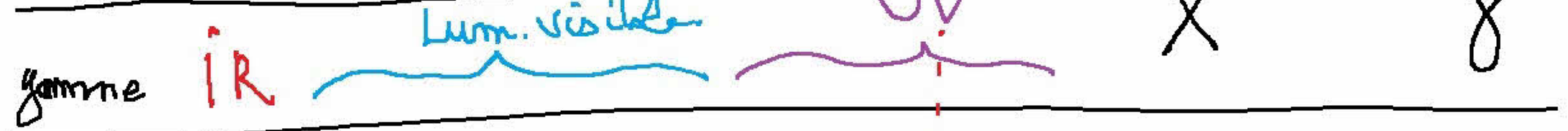


# IV - Ondas Radioelectrique

gamma	TBF	BF	MF	HF	VHF	UHF	SHP	EHF
F (Hz)	50	10 kHz	MHz (10 <sup>6</sup> )		100 MHz	1 GHz	100 GHz	1000 GHz
$\lambda$			300 m	3	30 cm	3mm	3mm	3mm
Ex.	THF 		GO AM FM	CB	FM TV		 microwaves	

V - Autres Ondes E.M.

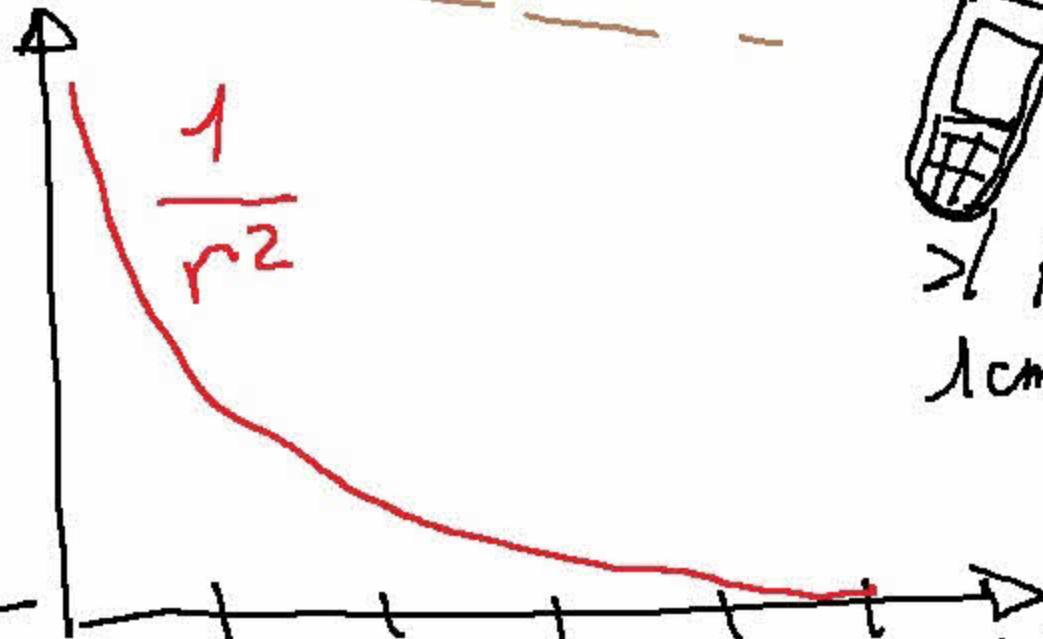
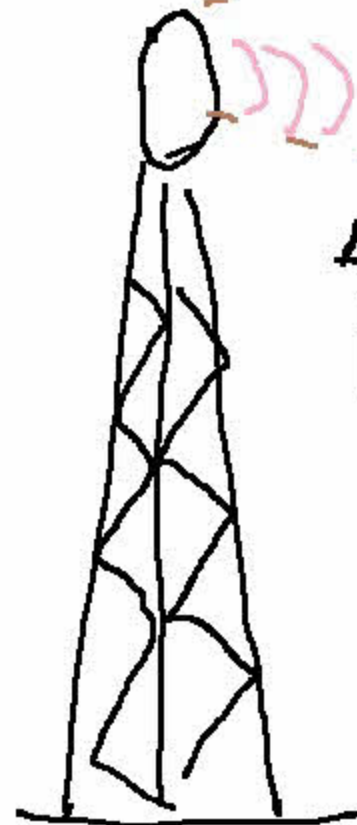
$T_e = 10^{12}$ ,  $P_e = 10^{15}$ ,  $E_e = 10^{18}$



## VI - "Puissances" des champs E.M.

- champ magn. terrestre - - - - - 50  $\mu$ T
- ligne H.T. (400.000V) (50m) - - - - -  $\leq 30 \mu$ T
- électro ménager 10-3000W - - - - - 0,01-2  $\mu$ T
- Rasoir élec 4-5W - - - - - 800  $\mu$ T
- IRM - - - - - 0,1-3 T
- portiques aéroports - - - - - 100  $\mu$ T
- GO, Allouis - - - - - 2000 kW
- téléphone mobile - - - - - 2W
- antennes - Relais - - - - - 20W

# VII - Puissance & Recommandations



• DAS =  $\leq 2 \text{ W/kg}$   
(thermique)

•  $\leq 50 \mu\text{T} / 5 \text{ mm}$   
( $\leq 100 \mu\text{T}$  pour 50 Hz)

•  $1 - 100 \text{ V/m}$

50  $\frac{\text{dCm}}{\text{dCm}}$   
(DAS = débit Absorption spécifique)