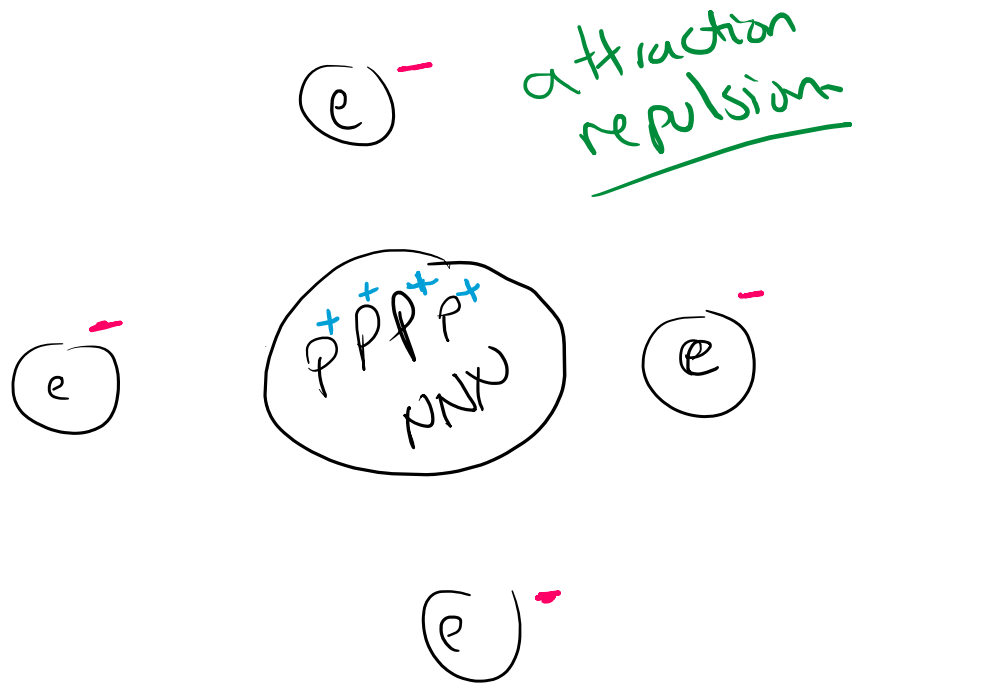
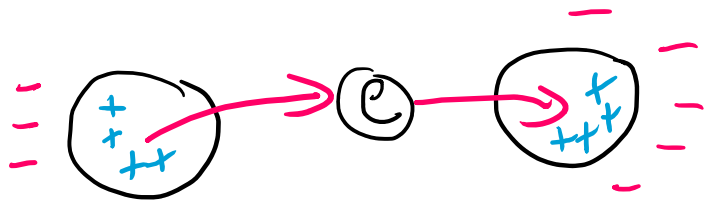
Charge



+4 −4 = 0 charge neutral

Sometimes an electron can move Not protons



+4 −3 = +1 +ve ion

+4 −5 = −1 −ve ion

charge

static

not moving

electrostatic charge

inside insulator

doesn't allow electrons to move

dynamic

moving

electric current

inside conductor

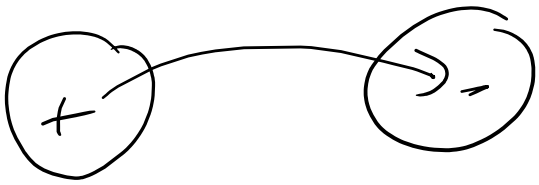
allows electrons to move freely

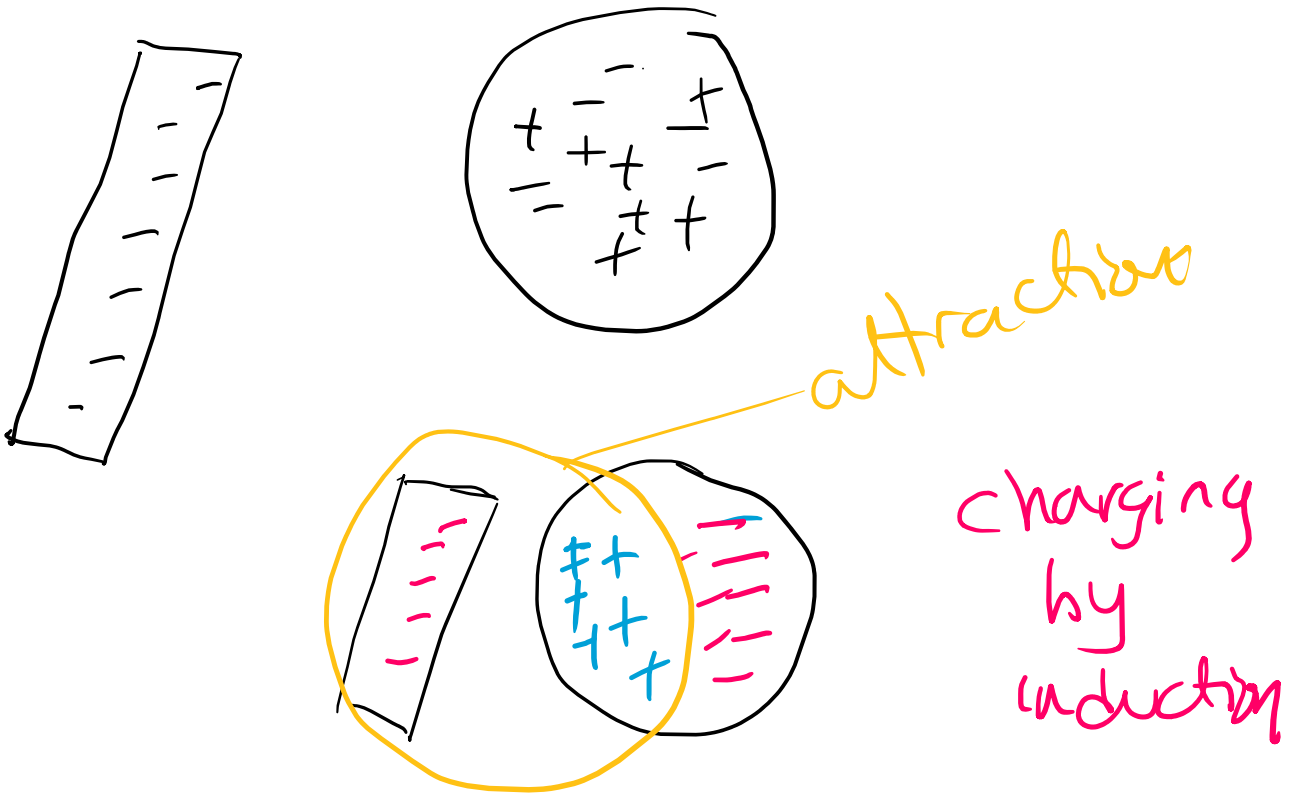
Like charges repel

unlike charges attract

charging can be done by rubbing

When two objects rub together, electrons jump from one to the other





Earthing

the Earth (ground)

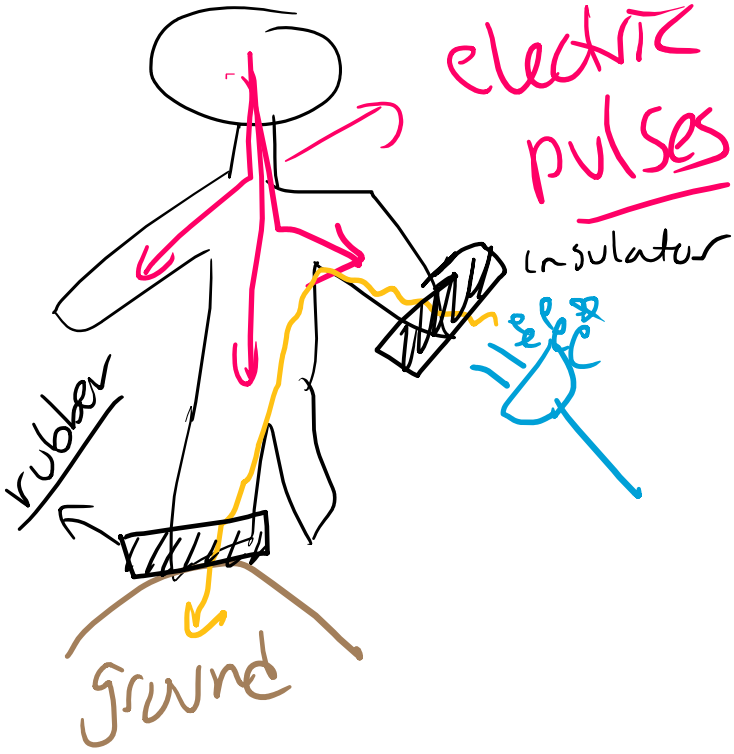
→ can give as many electrons as needed

→ can take as many electrons as needed

Earthing an object will make the object neutral

+ we always Earth (ground) our electric devices to avoid electric shock.

Electric Shock



(very very small current)

0.001 Ampere

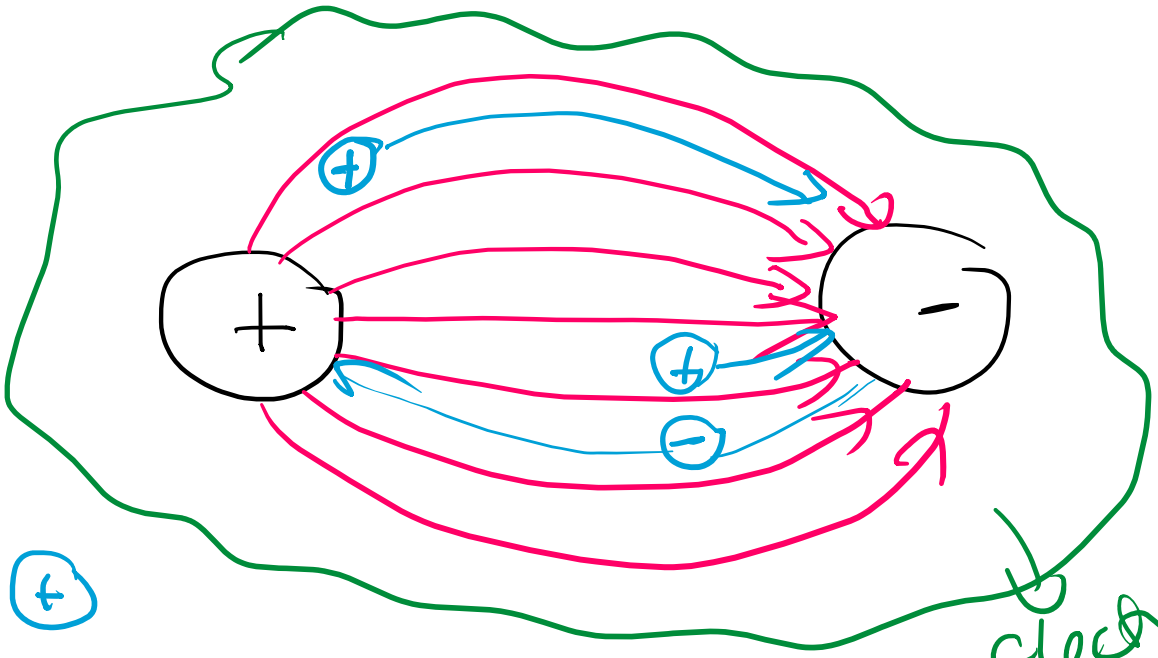
current from wall socket ⇒ 25 A

Peoples Skin is an insulator, BUT All water in the body is a conductor (inside cells) (inside Blood)

Electric Shock

1. our brain controls our muscles using electric current.
   large current from outside will override the brains signals
   ⇒ results in paralysis of muscles
2. current flowing through any material ⇒ heating
   ⇒ electric shock causes burns
   ⇒ internal organs
3. paralysis the heart
   ⇒ heart attack
   heart stops
   ⇒ Brain uses 90% of oxygen
   ⇒ Brain dies after a few minutes without O_2

Electric fields

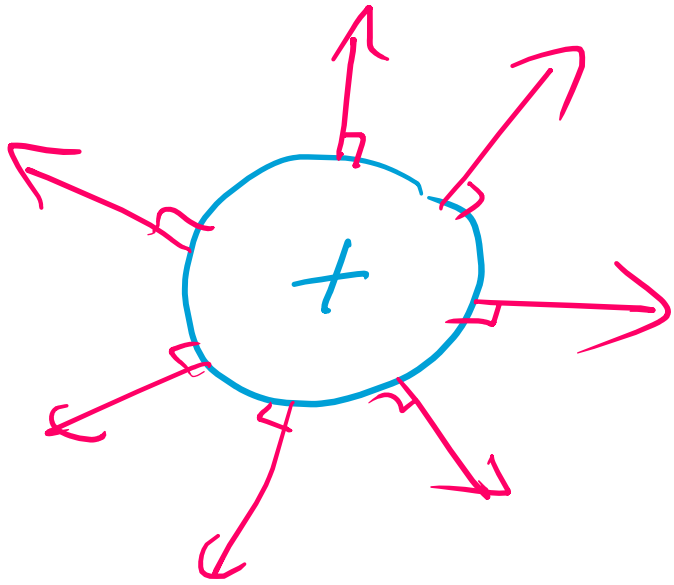


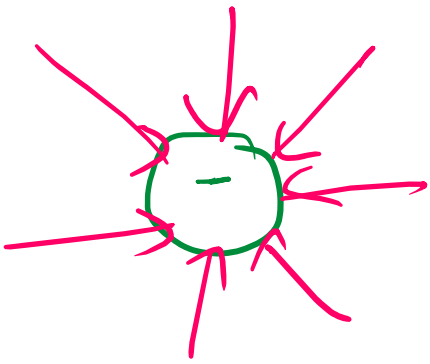
Electric field lines
⇒ show the direction & strength of the electric force

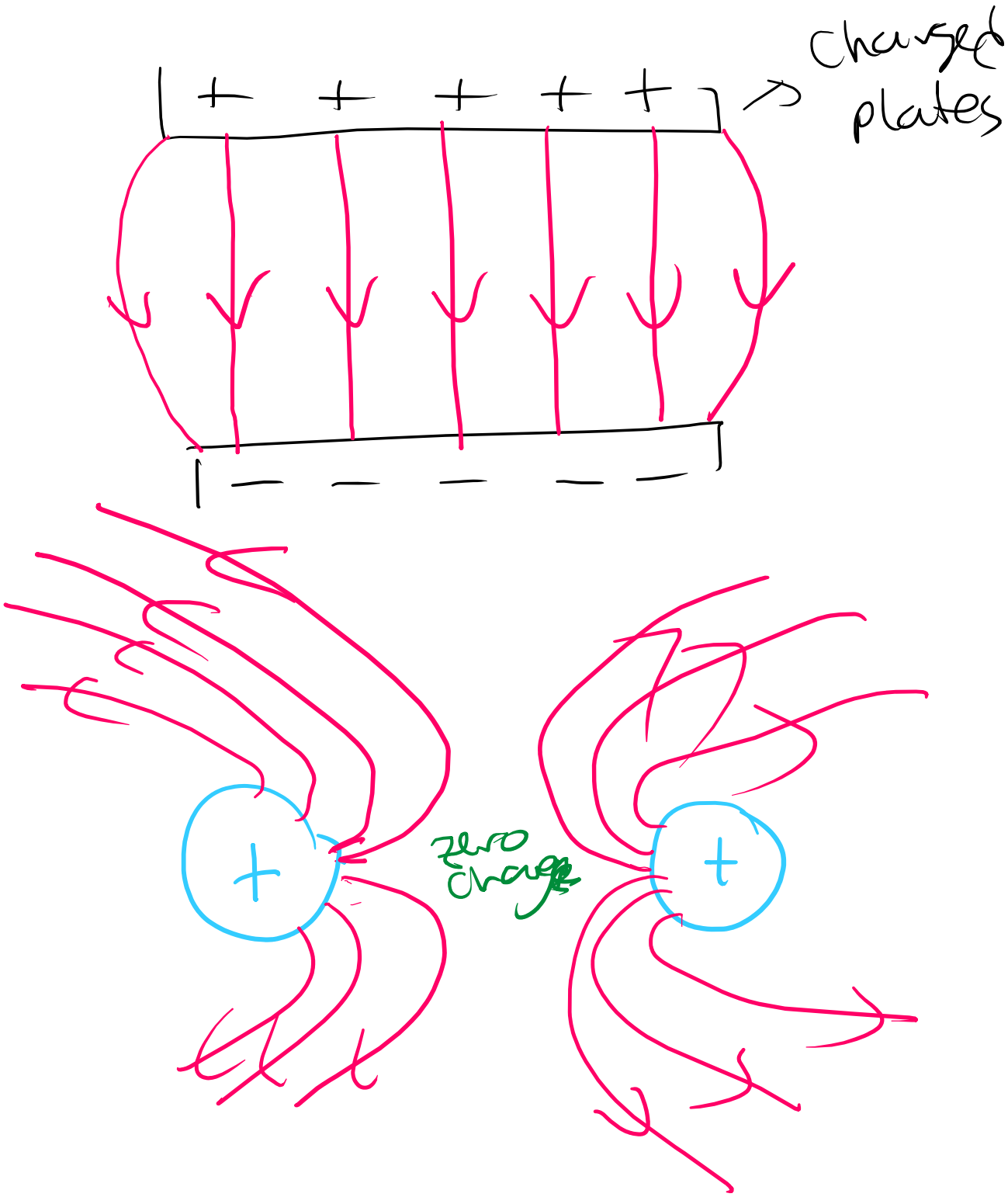
Electric field: Area around a charge where another charge will feel a force

Electric field lines are always from ⊕ to ⊖

Always perpendicular to surfaces

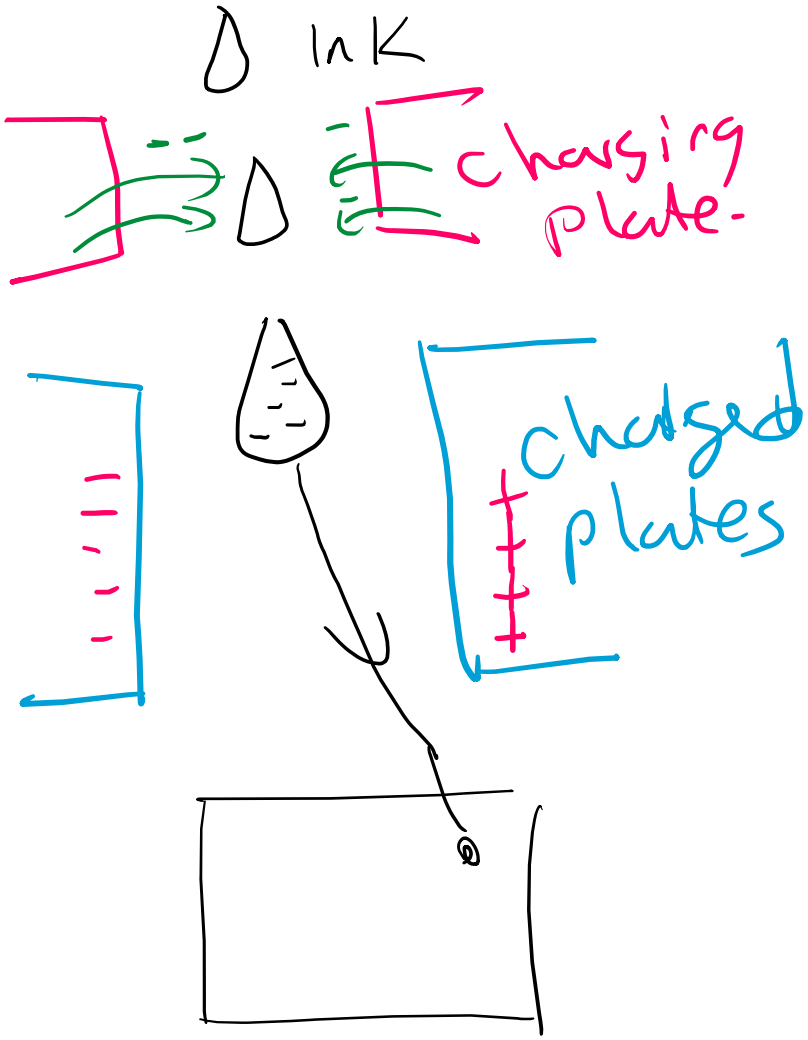




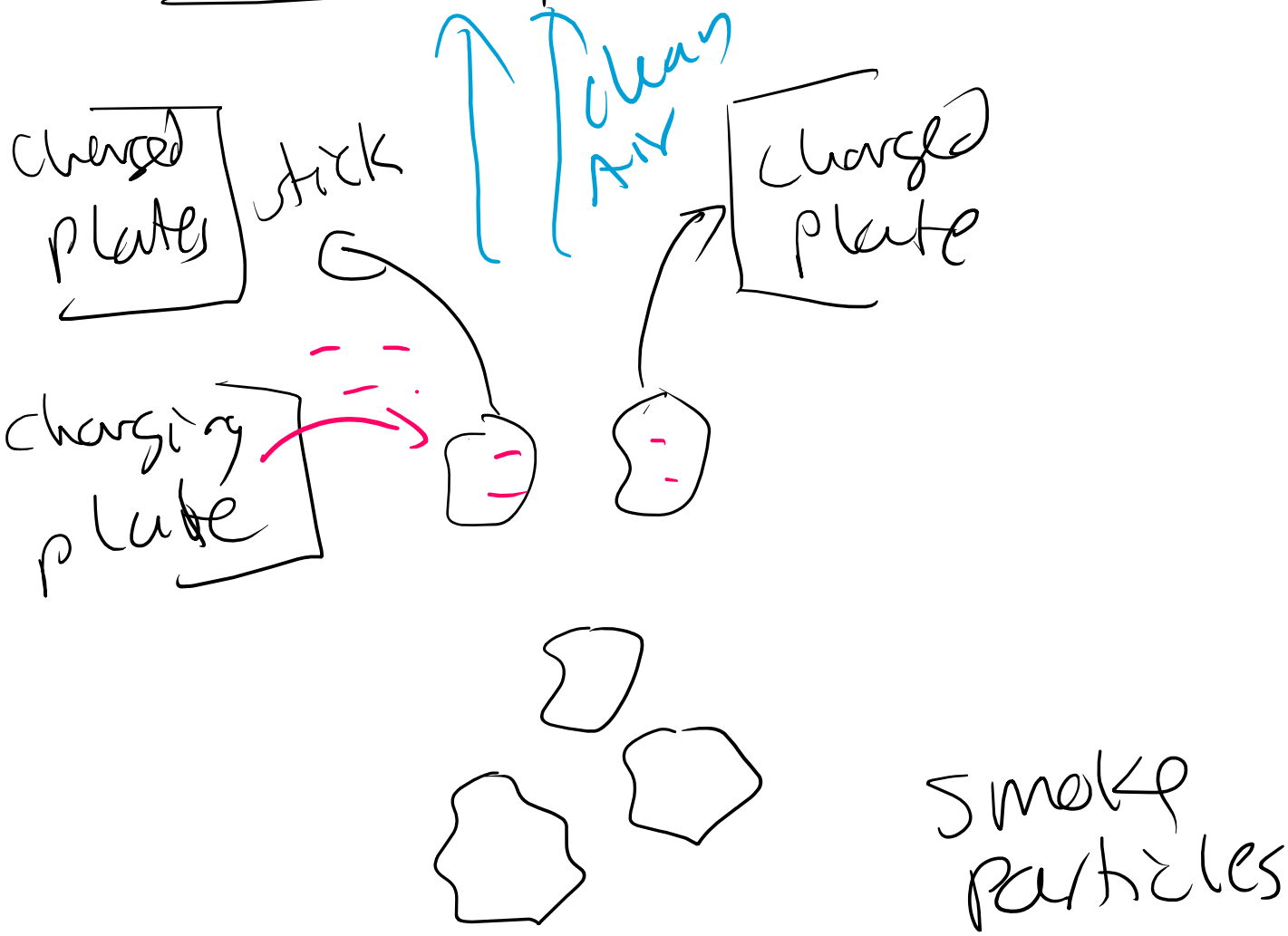

charged plates
+ + + + +
− − − − −
+
zero charge
+

Applications

ink jet printer



Chimney cleaner



	$_{1}H$								$_{2}He$
$_{3}Li$	$_{4}Be$	$_{5}B$	$_{6}C$	$_{7}N$	$_{8}O$	$_{9}F$	$_{10}Ne$		
$_{11}Na$	$_{12}Mg$	$_{13}Al$	$_{14}Si$	$_{15}P$	$_{16}Cl$				

$^{A}_{Z}X$

A → mass number = prot + neutrons

Z → Atomic number = protons