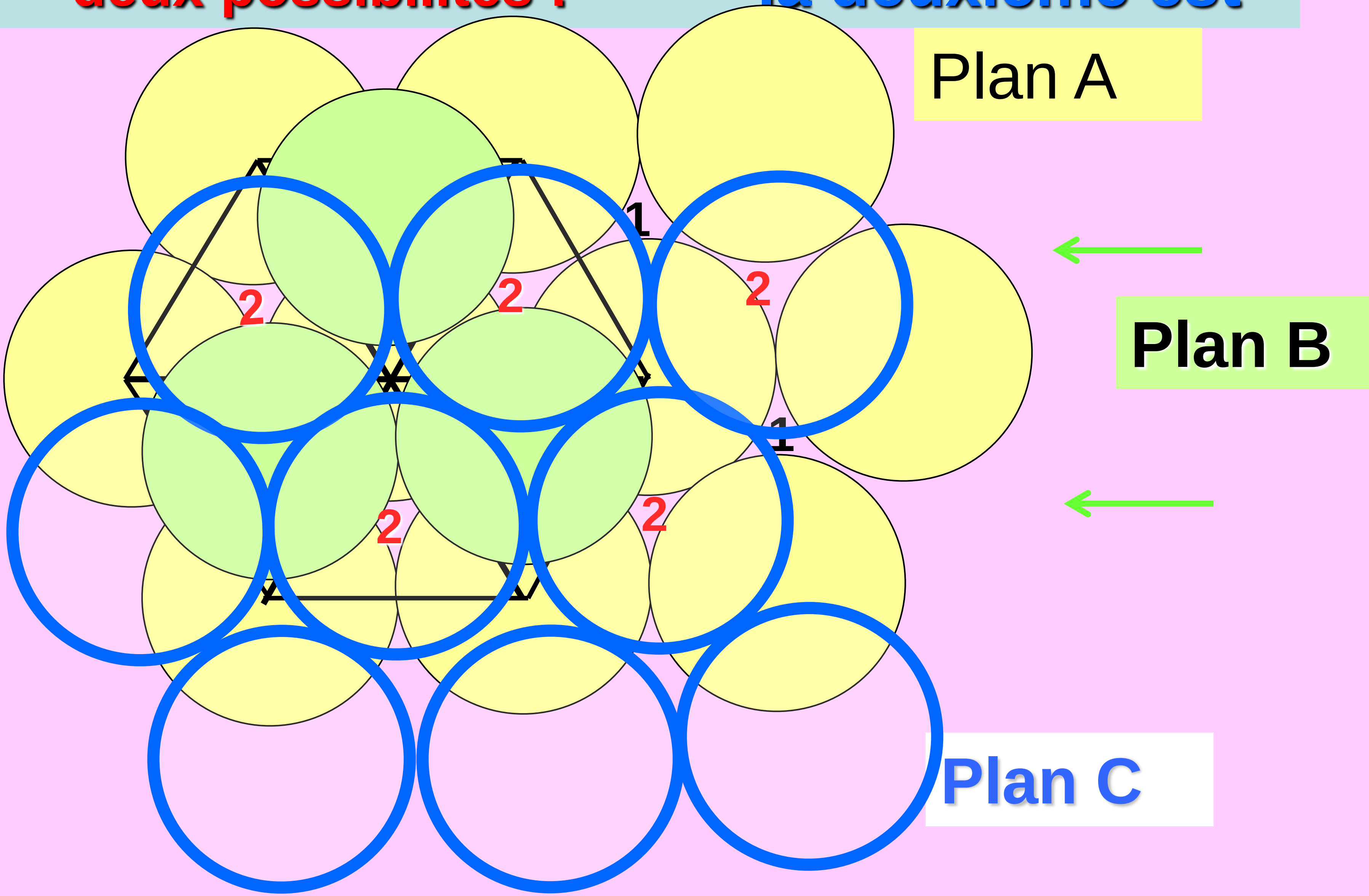
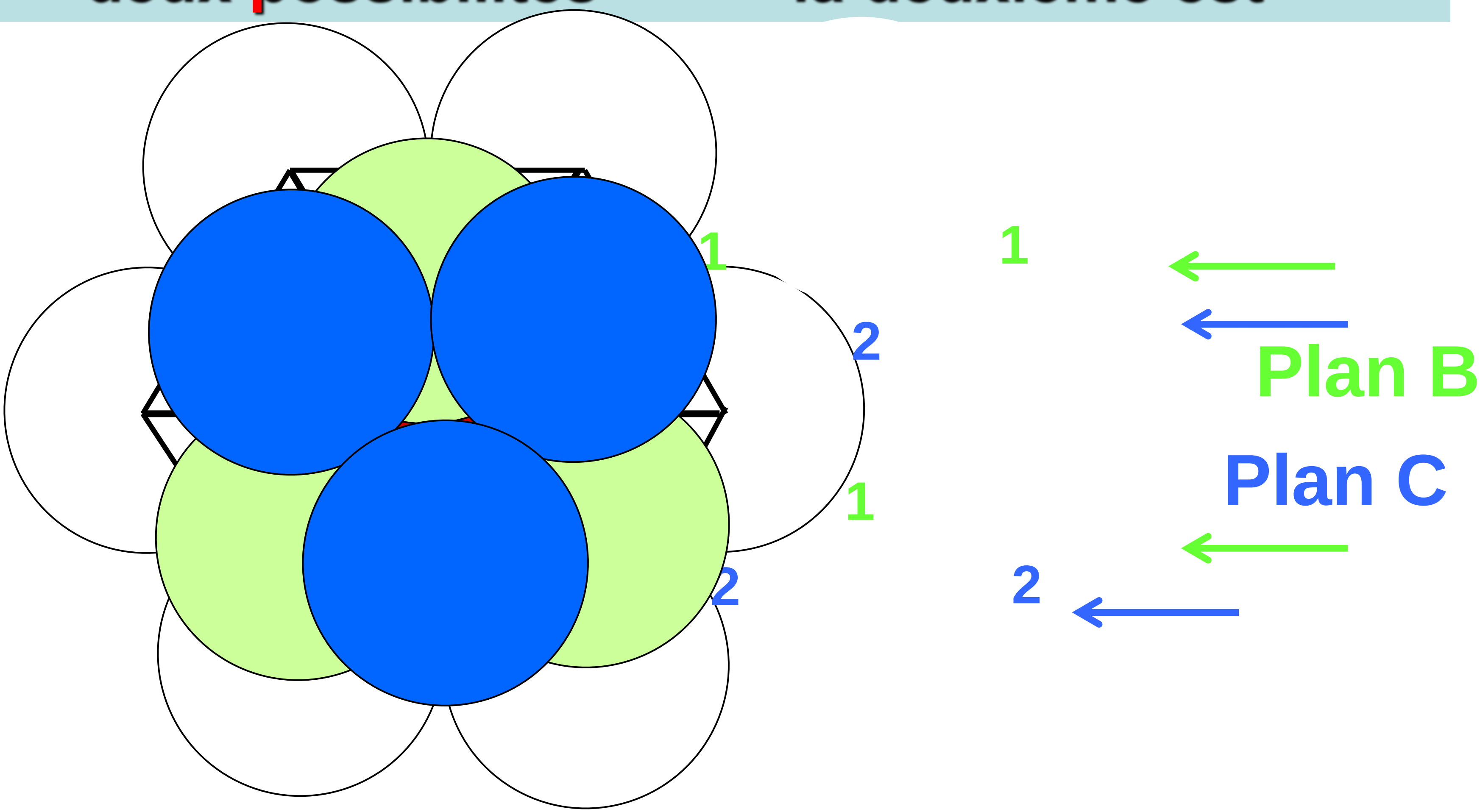
2- Troisième plan compact C :

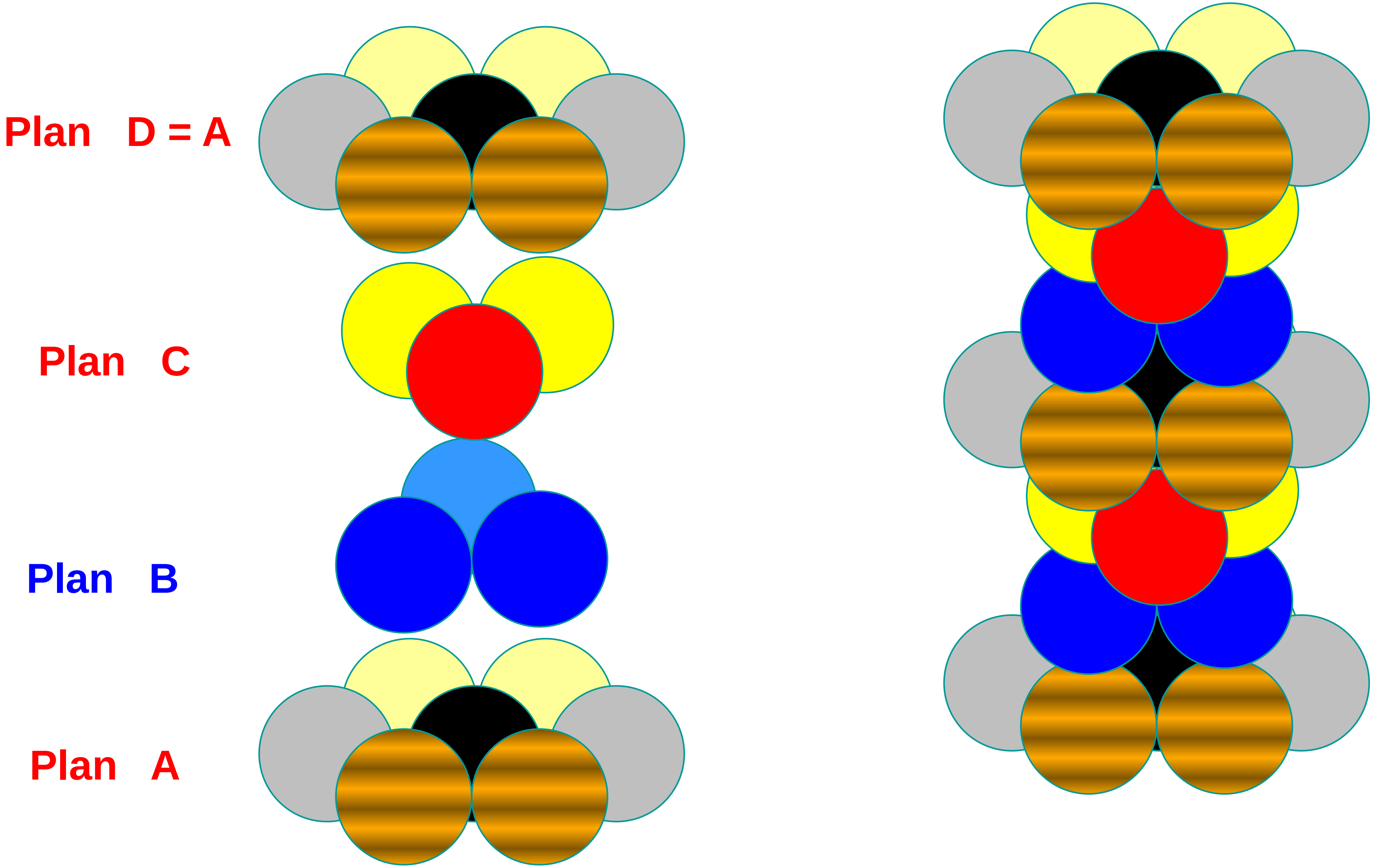
deux possibilités : **la deuxième est**



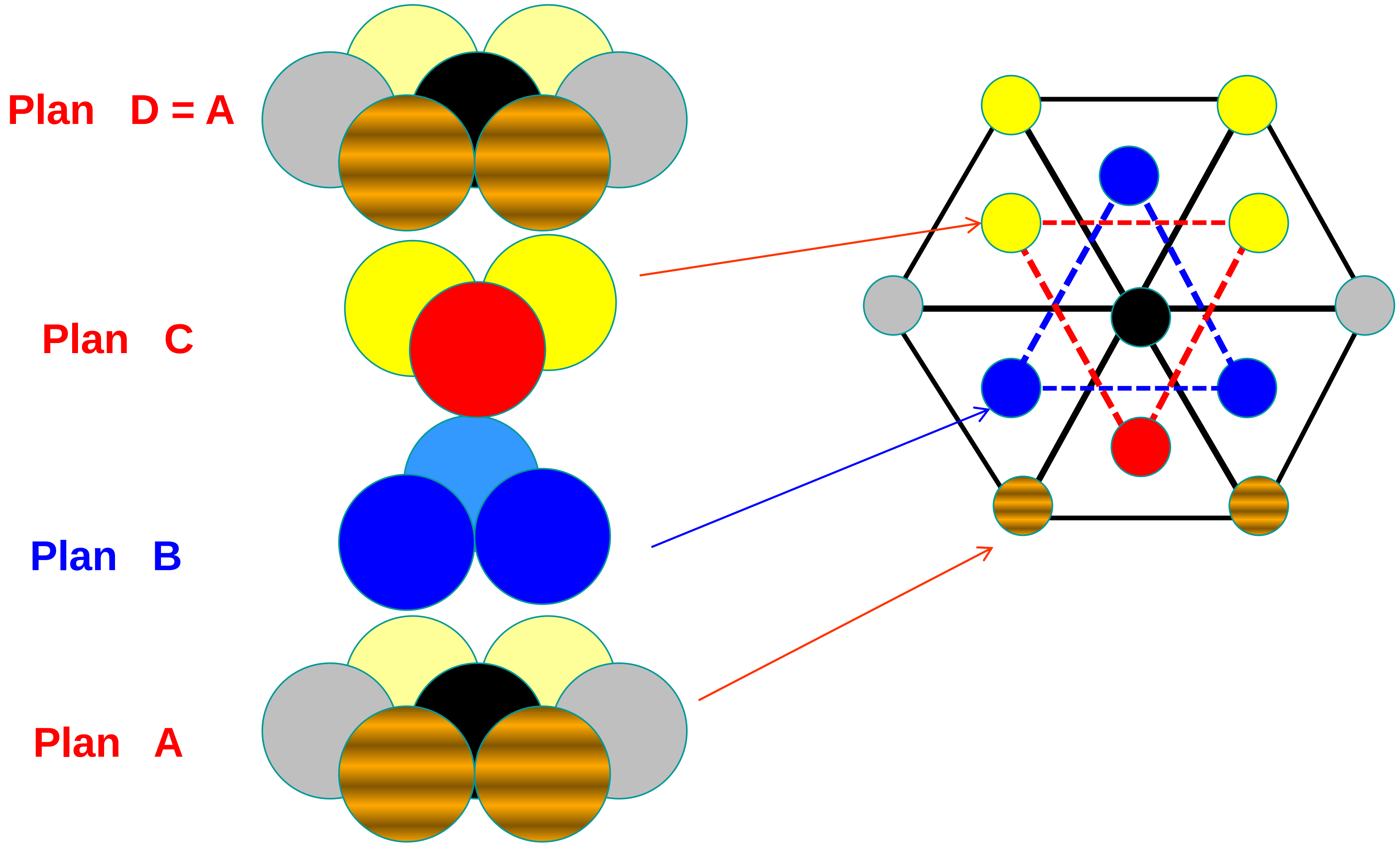
2- Troisième plan compact C :

deux possibilités **la deuxième est**

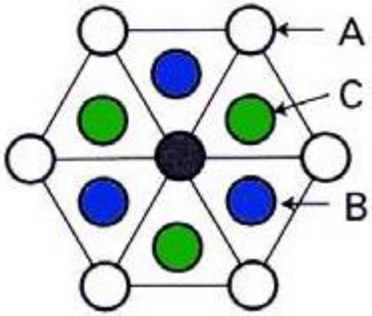


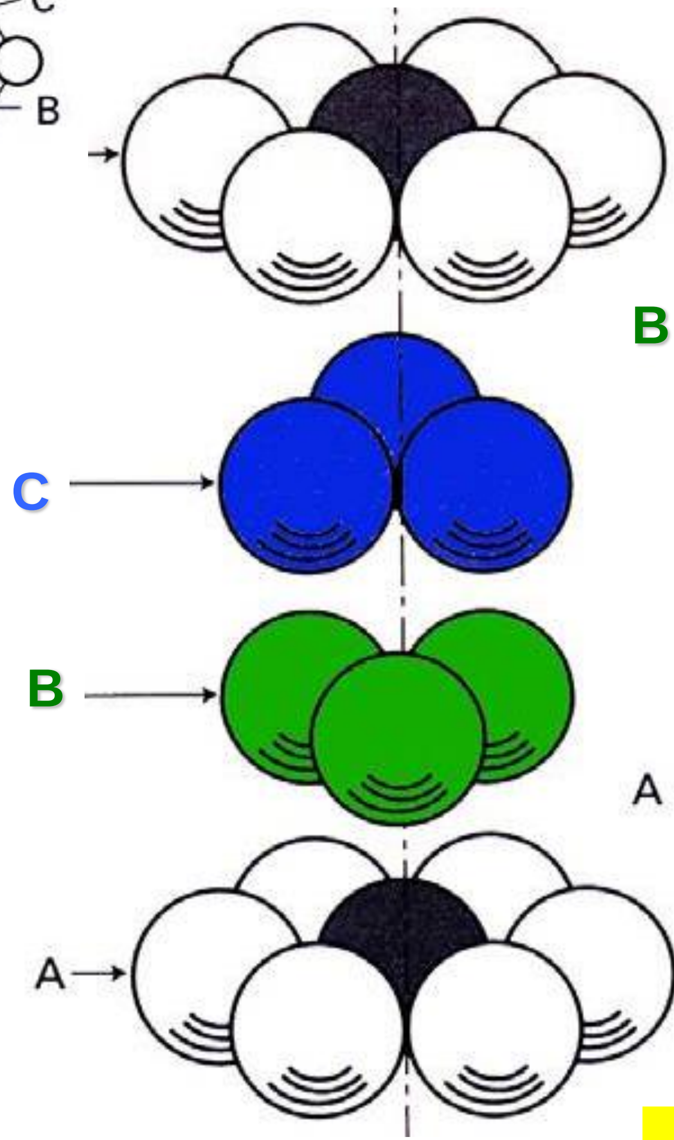


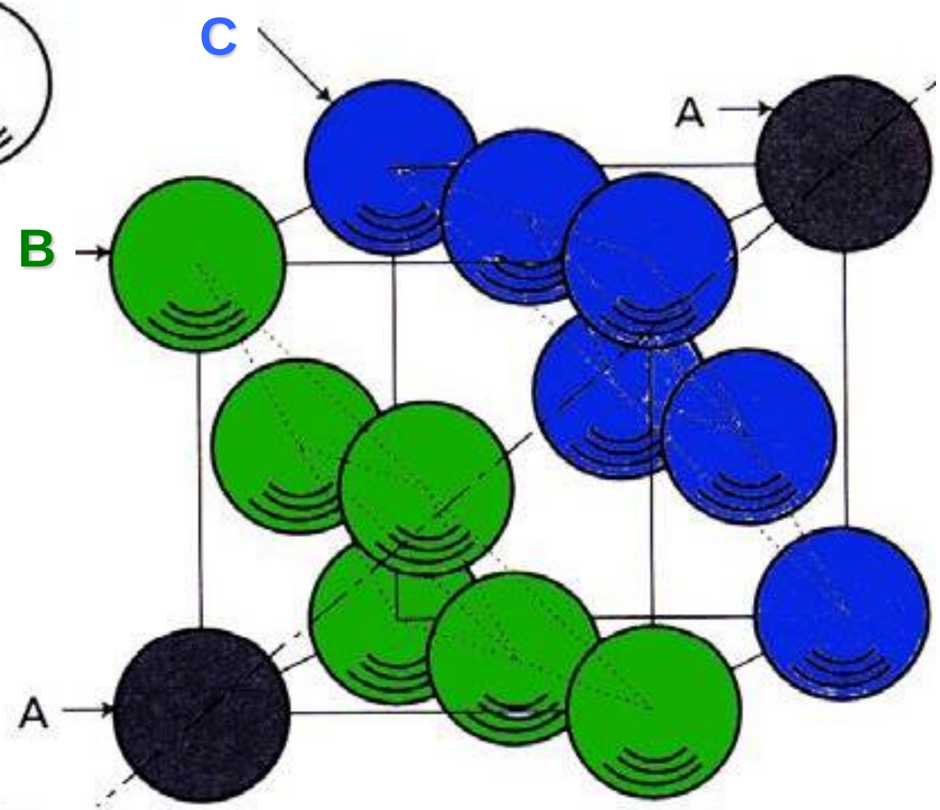
Succession des plans
A B C A B C A B ....



Plan D = A
Plan C
Plan B
Plan A

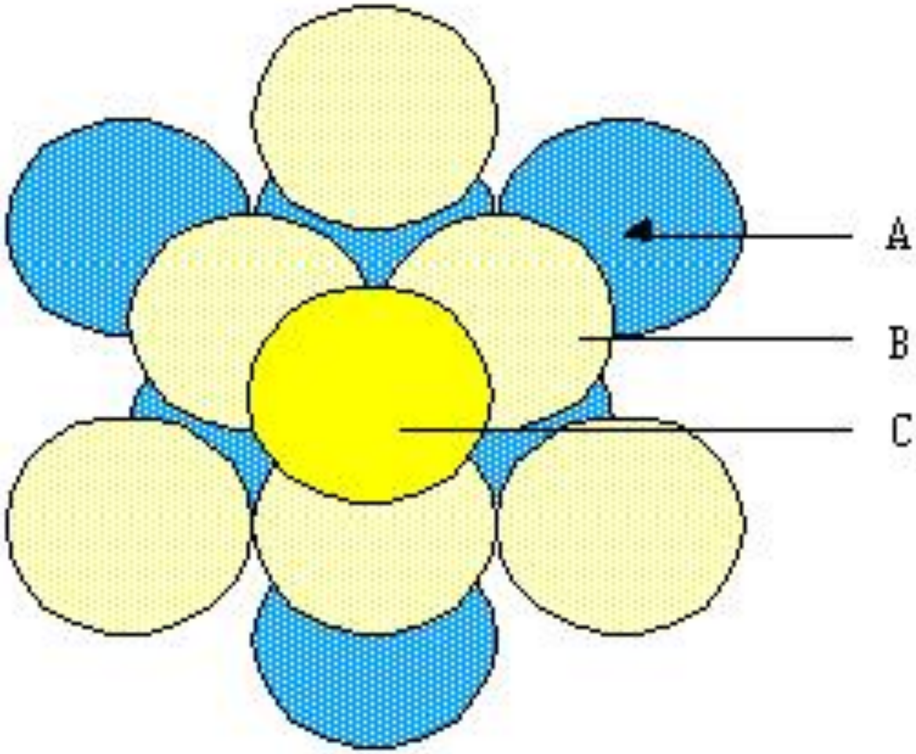






Succession des plans
A B C A B C …….

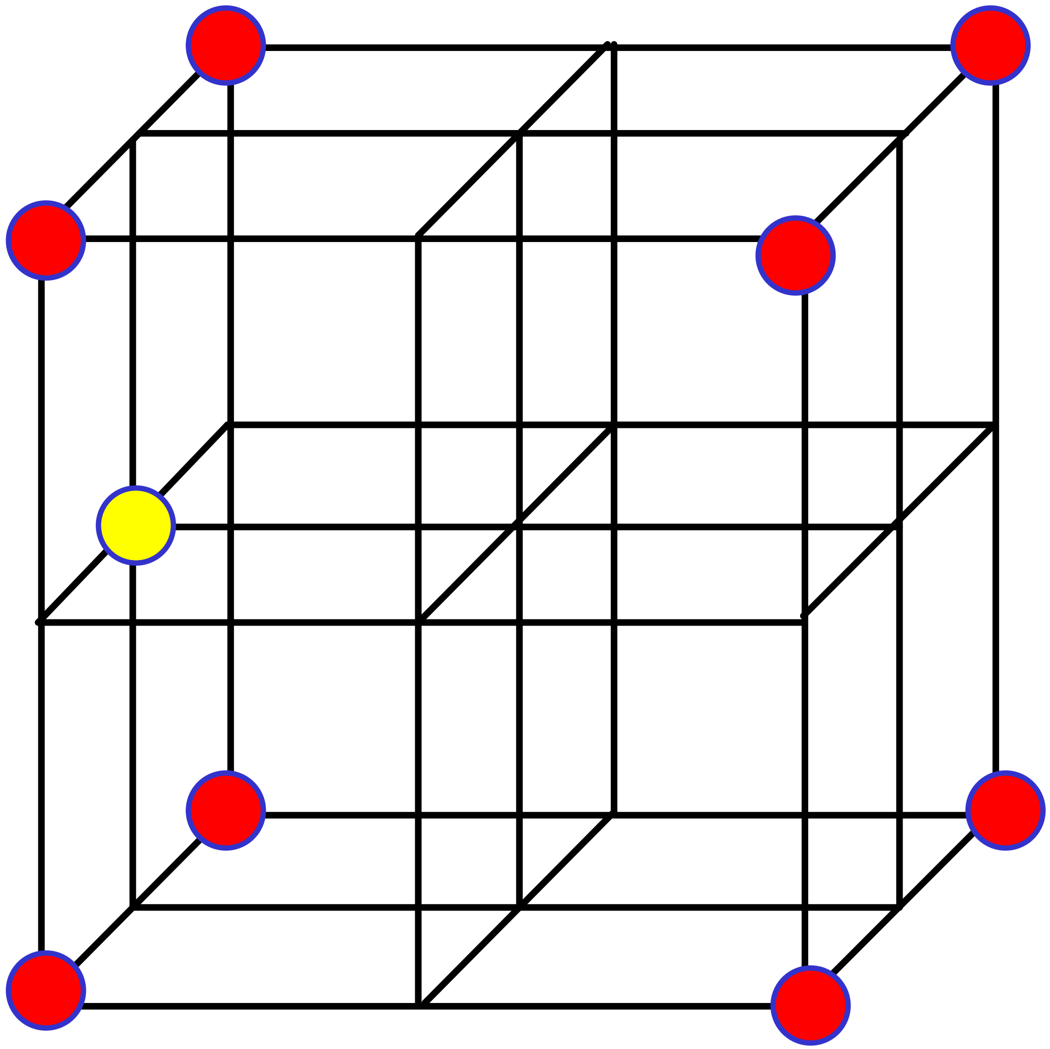
= Maille Cubique à faces centrées
CFC



L'empilement compact ABCABC…
donne une structure cubique à faces centrées.

Maille Cubique à faces centrées

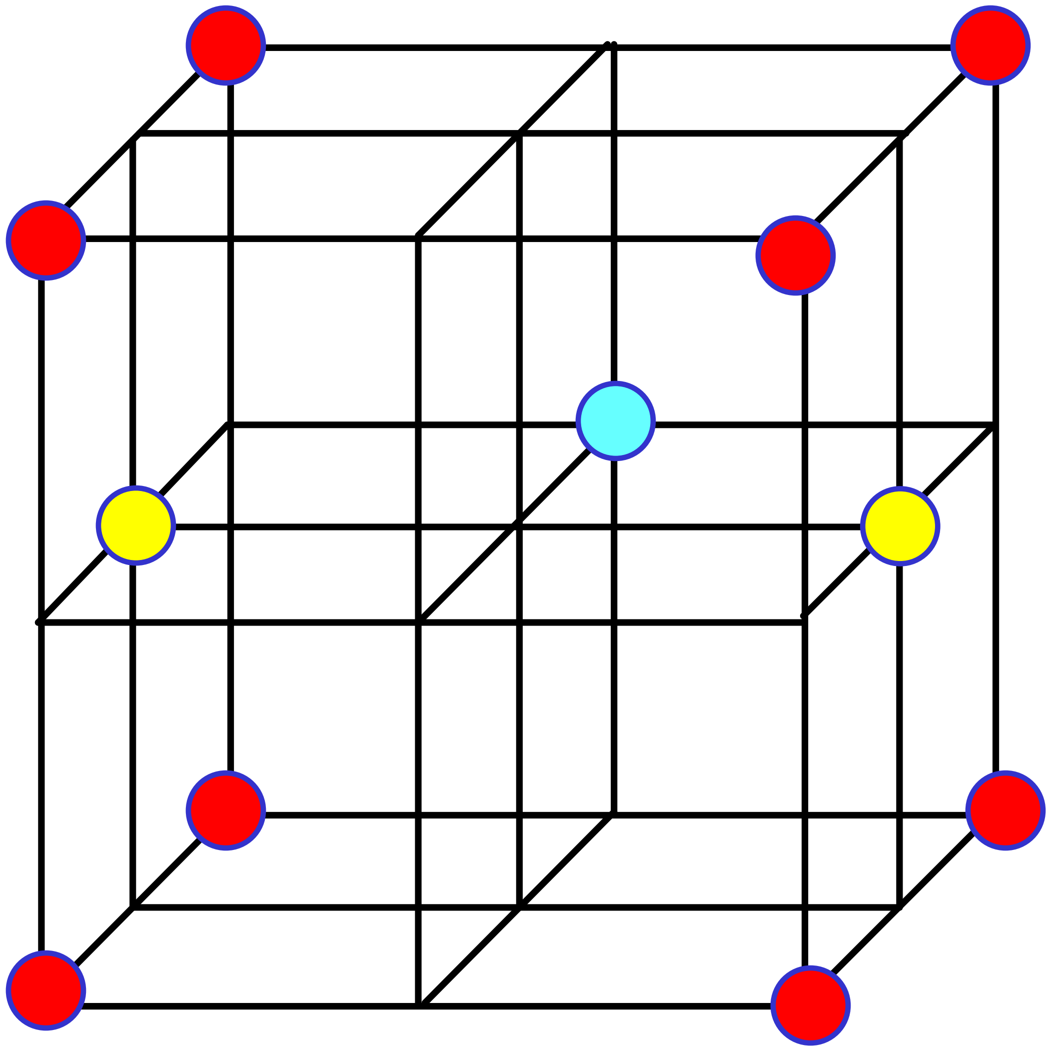
CFC



Coordonnées réduites

(0, 0, 0)

(1/2 , 0, 1/2)

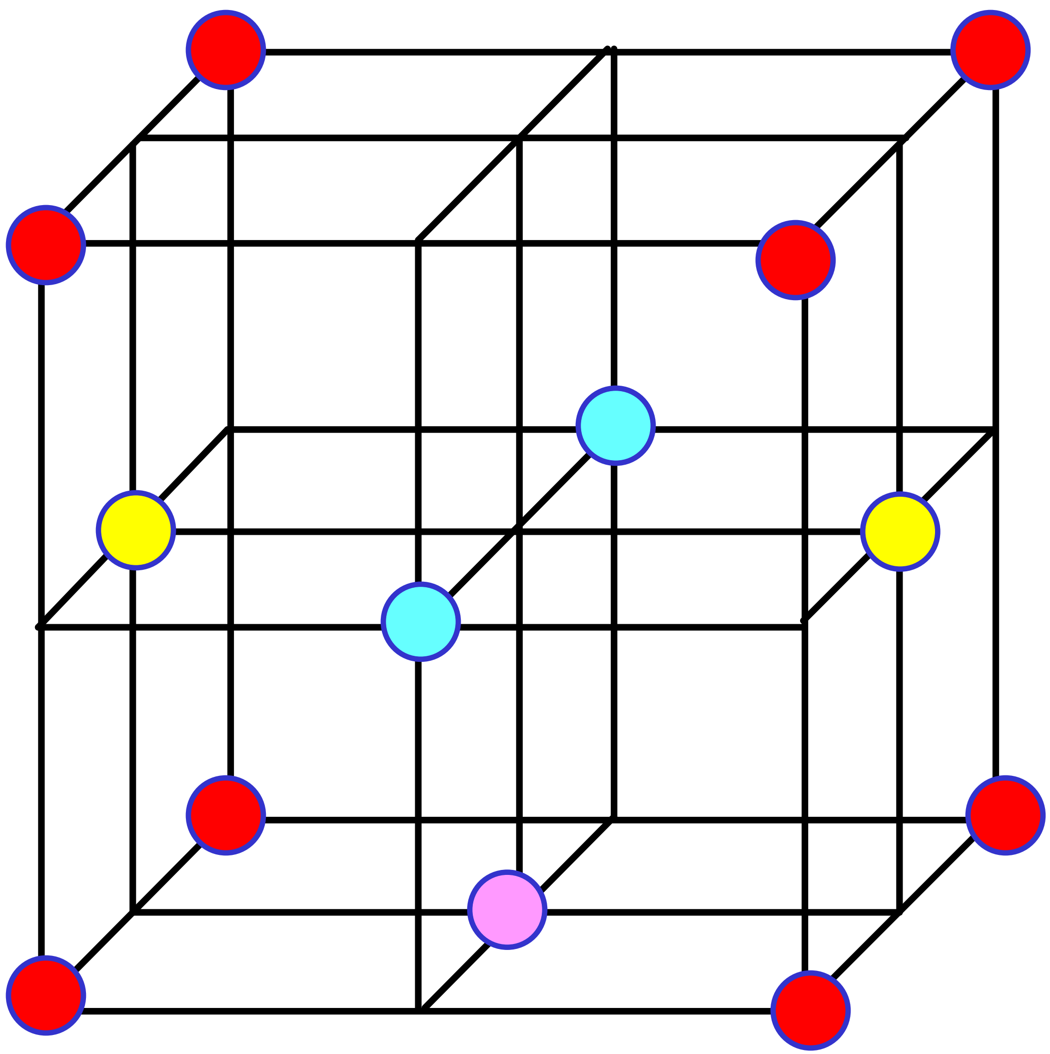


Coordonnées réduites

(0, 0, 0)

(1/2 , 0, 1/2)

(0 , 1/2 , 1/2)



Coordonnées réduites

(0, 0, 0)

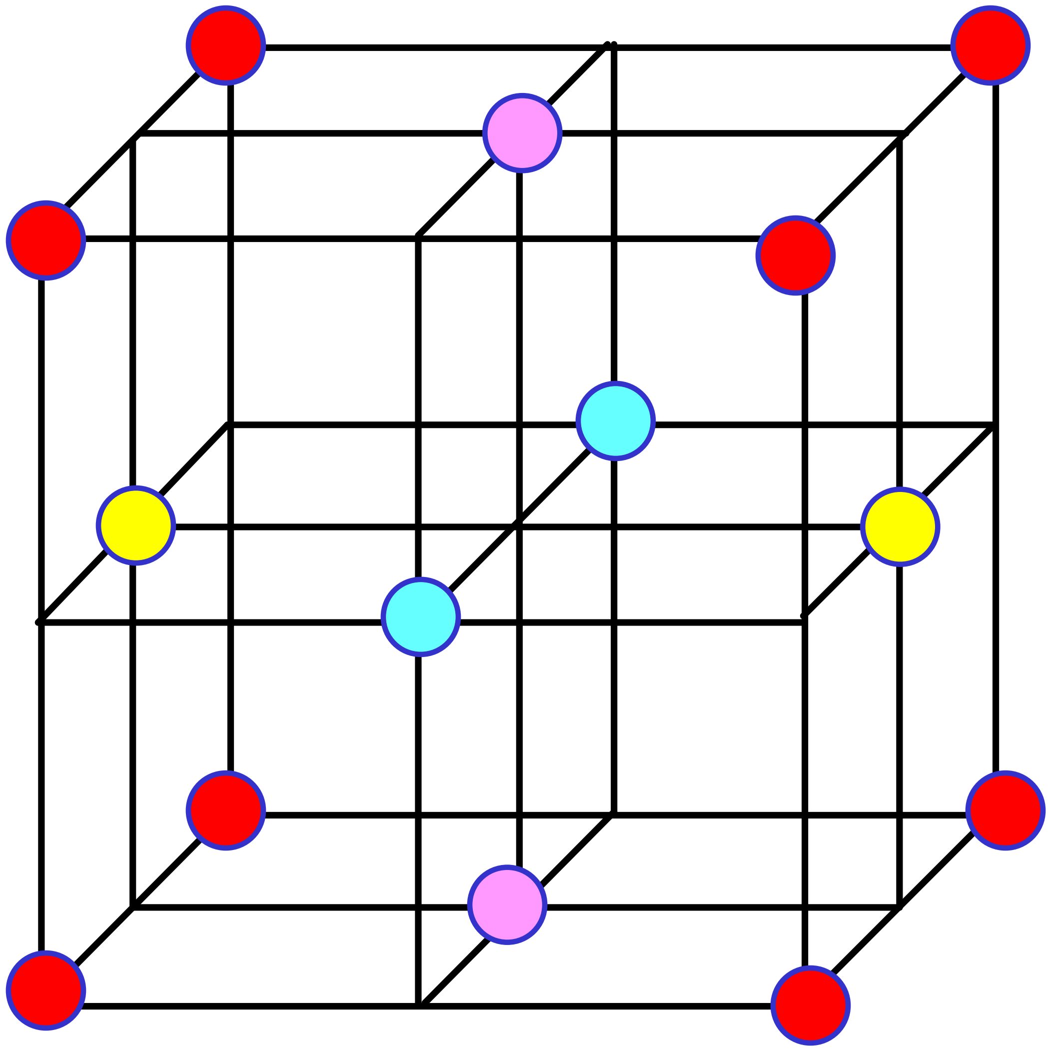
(1/2 , 0, 1/2)

(0 , 1/2 , 1/2)

(1/2 , ½, 0)

Structure Cubique à faces centrées

Mode du réseau cubique: Mode F



Coordonnées réduites

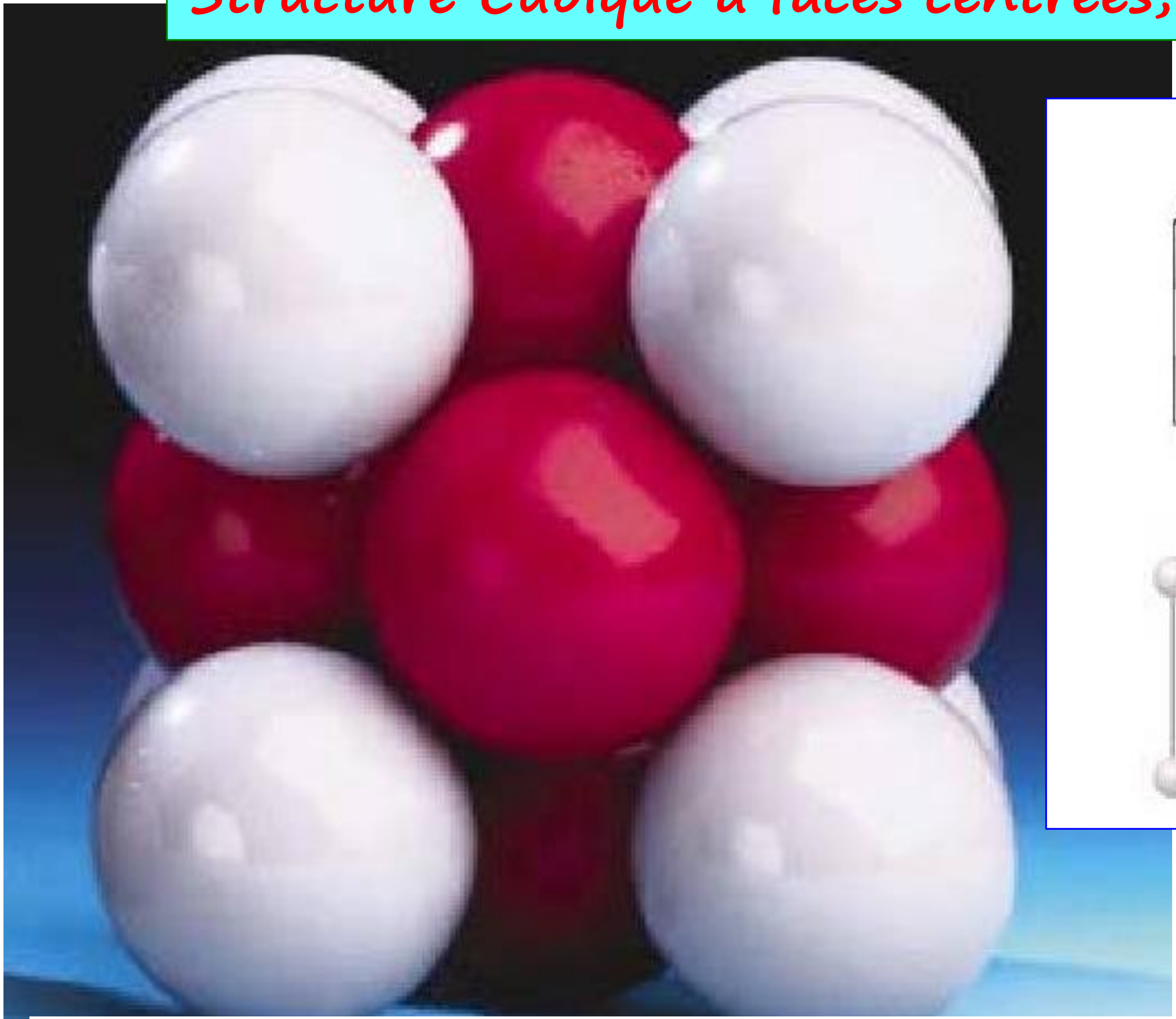
(0, 0, 0)

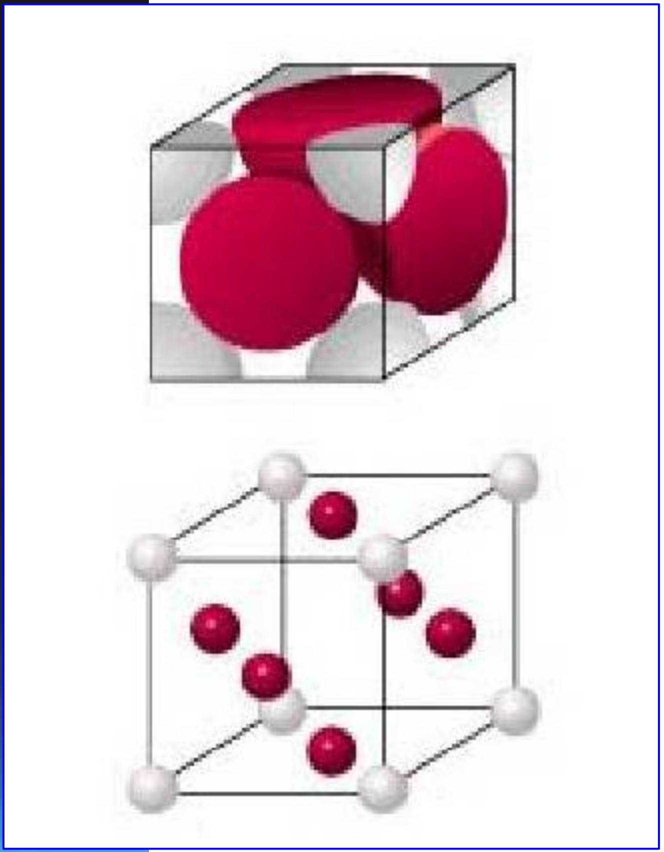
(1/2 , 0, 1/2)

(0 , 1/2 , 1/2)

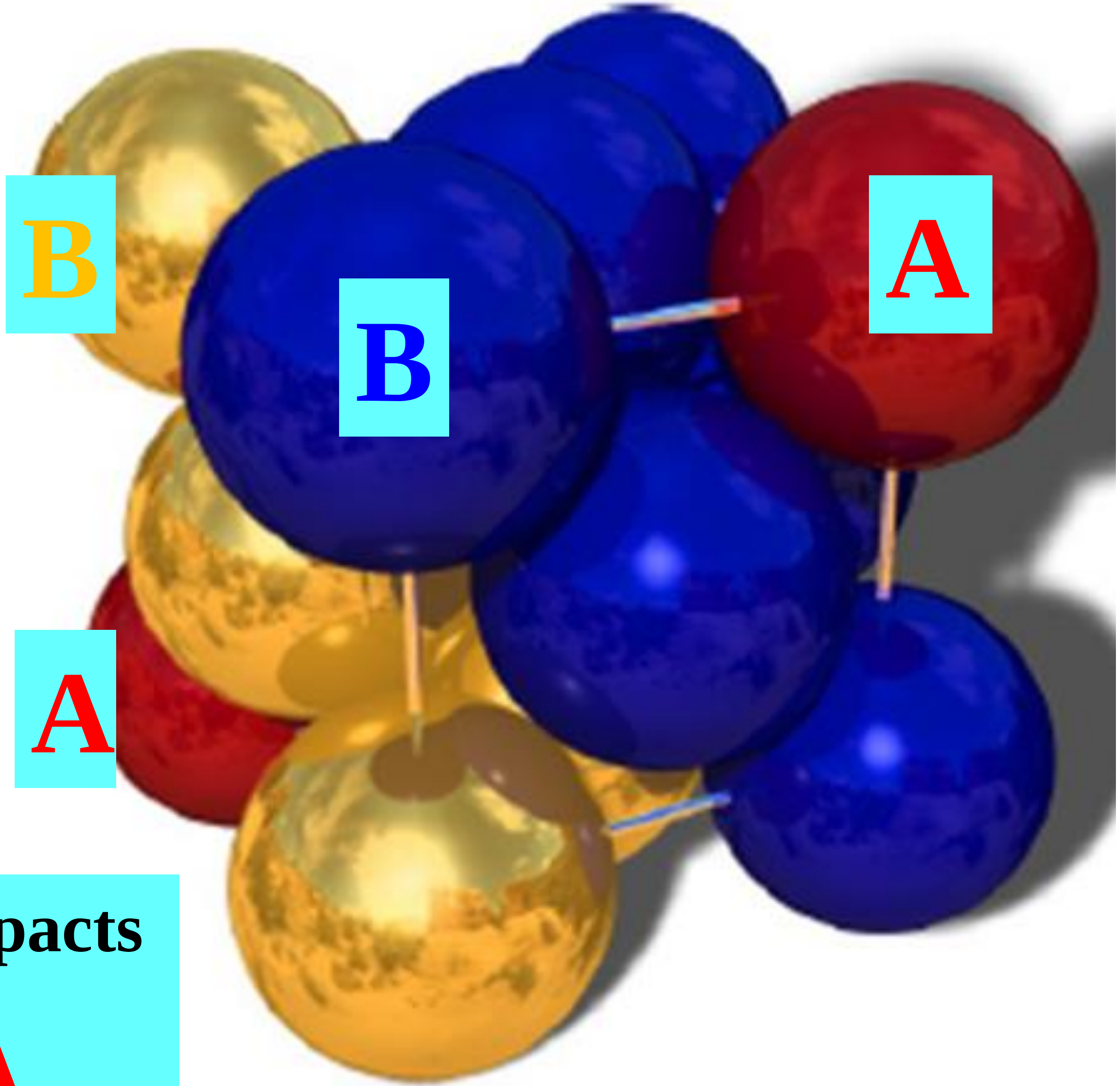
(1/2 , 1/2, 0)

Structure Cubique à faces centrées, Mode F





On compte donc 8 atomes (sommets) x 1/8
+ 6 atomes (faces) x 1/2
= 4 atomes/maille

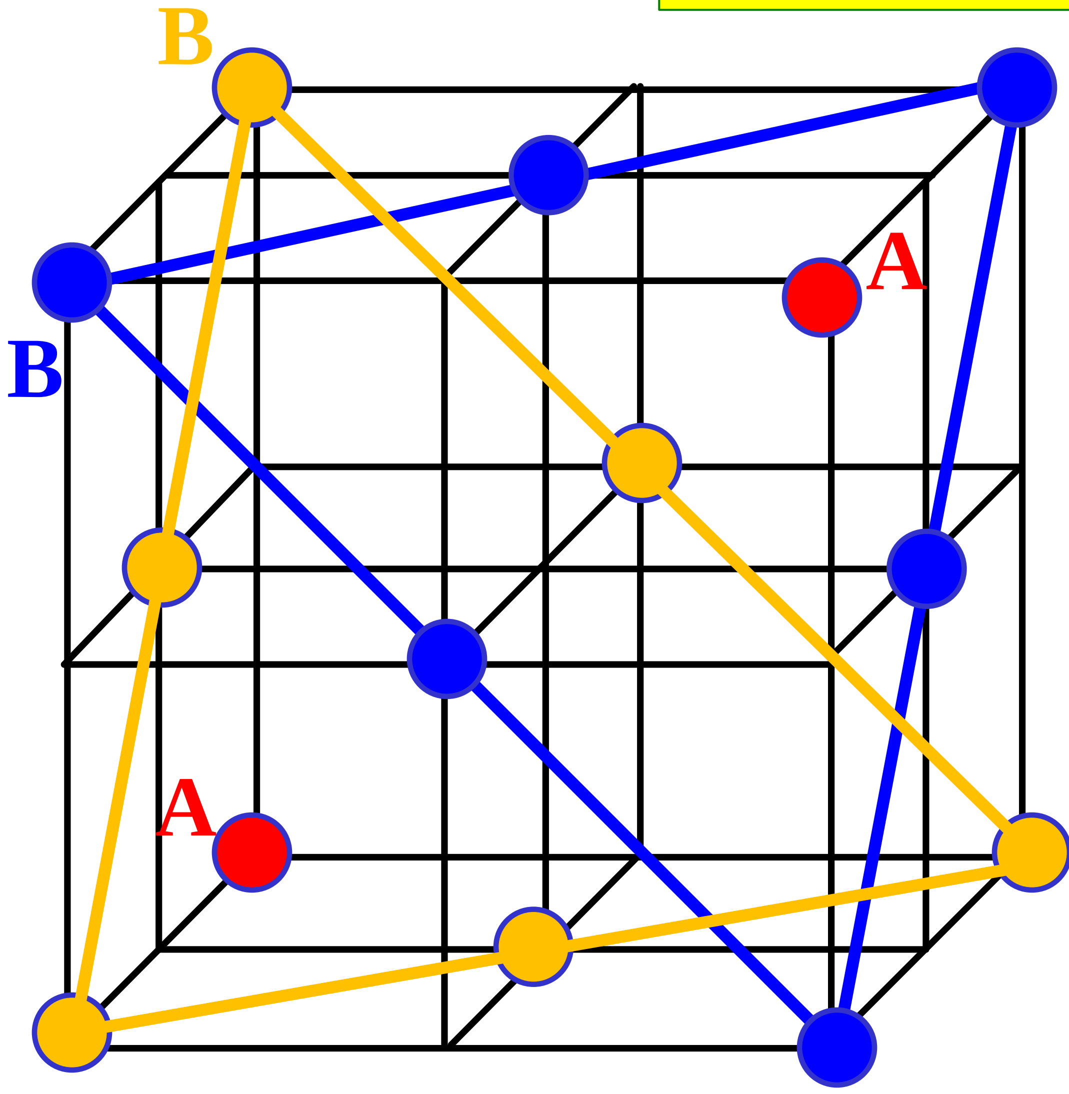


Plans compacts

ABCA

Structure Cubique à faces centrées

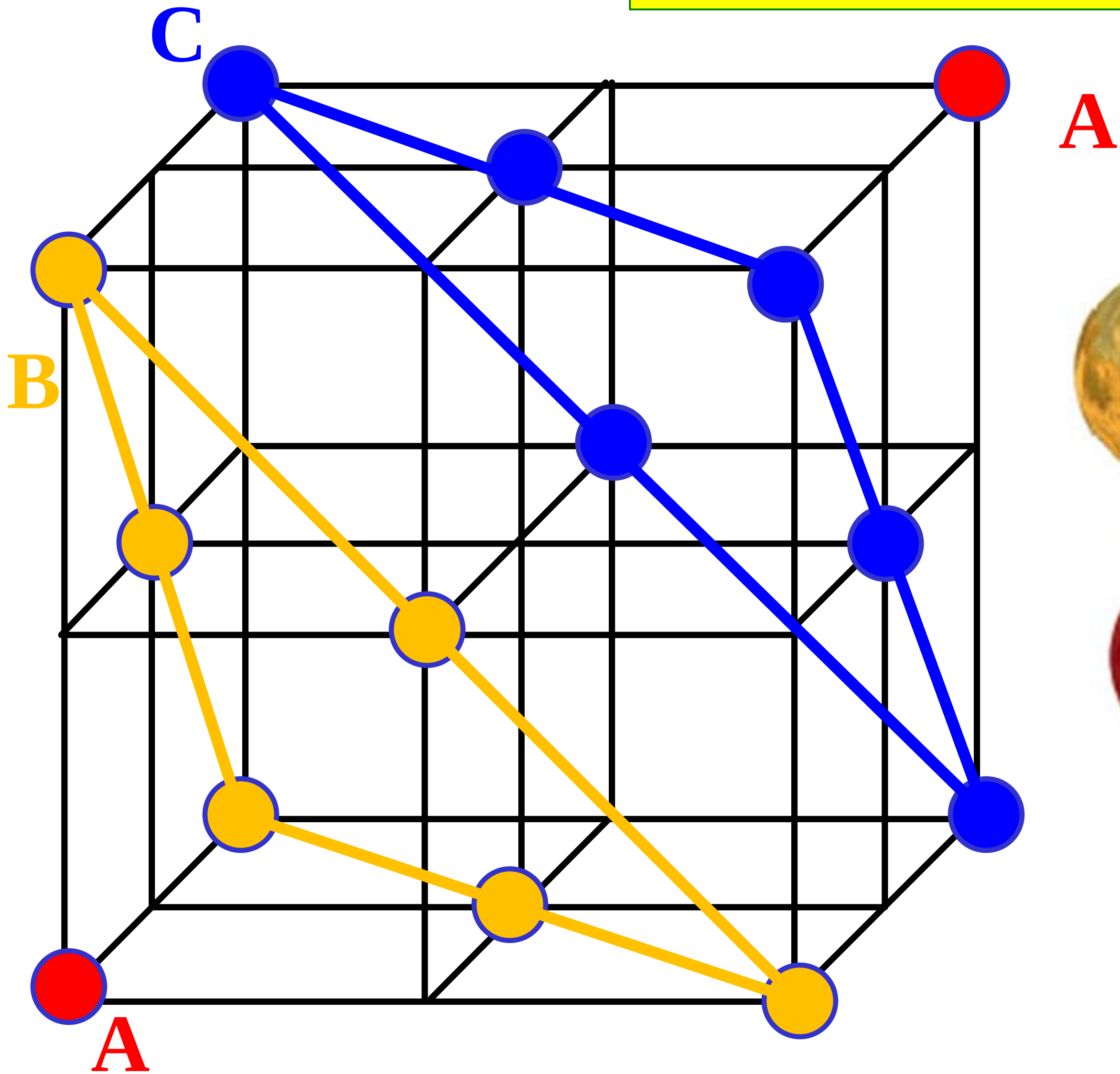
Mode du réseau cubique: Mode F



Plans compacts ABCA

Autre présentation : Structure Cubique à faces centrées

Mode du réseau cubique: Mode F



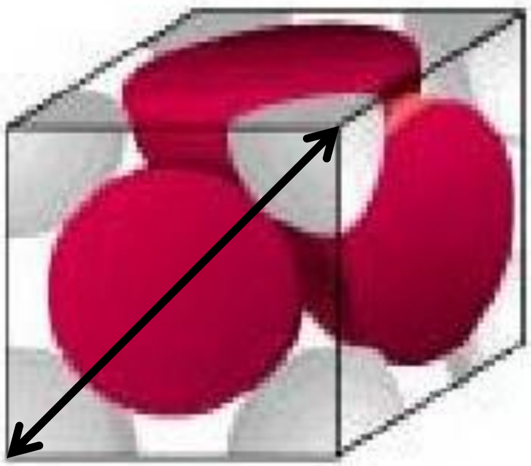
Plans compacts ABCA

Structure Cubique à faces centrées, Mode F

τ = n. volume(1atome)/V(maille) avec n = 4 atomes/maille

v (1 atome) =(4/3) πR^3 et V(1 maille) = a^3

Or pour un CFC, les atomes sont tangents selon la diagonale de la face

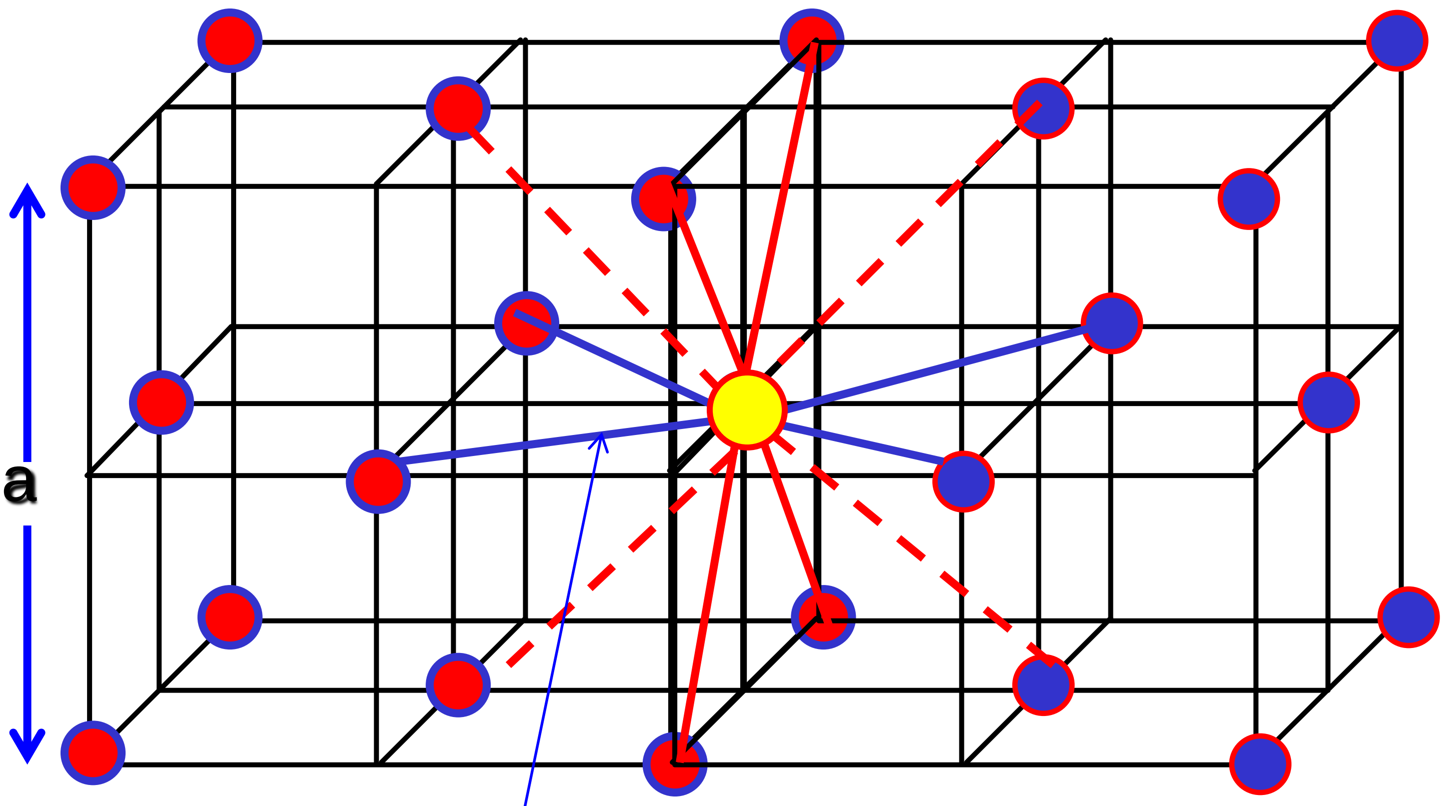


Relation de tangence :
$4R = a\sqrt{2}$

D'où la relation :

$$\tau = \frac{4 \cdot (4/3)\,\pi R^3}{a^3} = \frac{4 \cdot (4/3)\,\pi \,(a\sqrt{2}/4)^3}{a^3} = 0{,}74$$

Structure Cubique à faces centrées, Mode F



coord. = ?

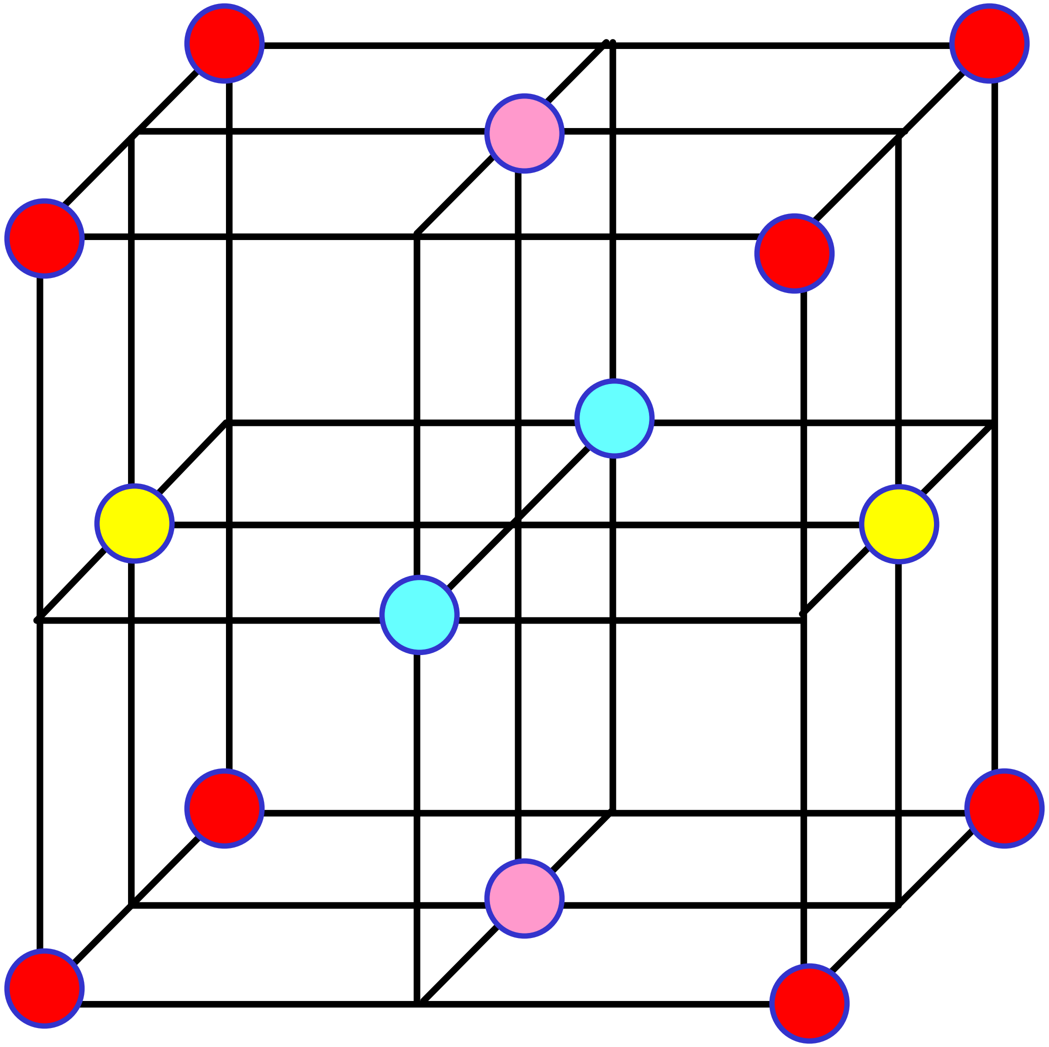
2 atomes sont situés à la distance $a\sqrt{2}/2$.

Chaque atome a 12 proches voisins

coord. = 12

Structure Cubique à faces centrées

Mode du réseau cubique: Mode F



Coordonnées réduites

(0, 0, 0)

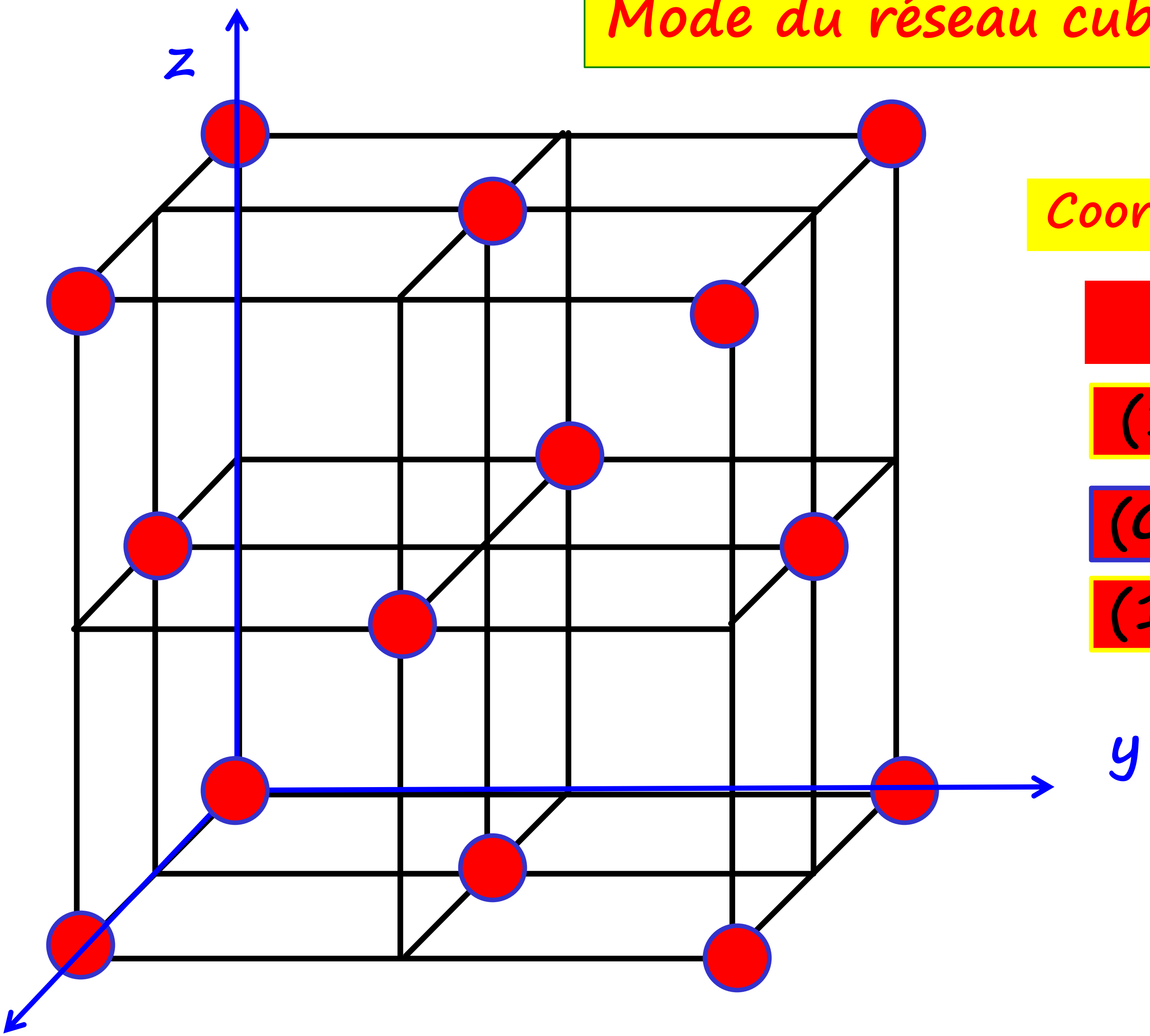
(1/2 , 0, 1/2)

(0 , 1/2 , 1/2)

(1/2 , 1/2 , 0)

Structure Cubique à faces centrées

Mode du réseau cubique: Mode F



Coordonnées réduites

(0, 0, 0)

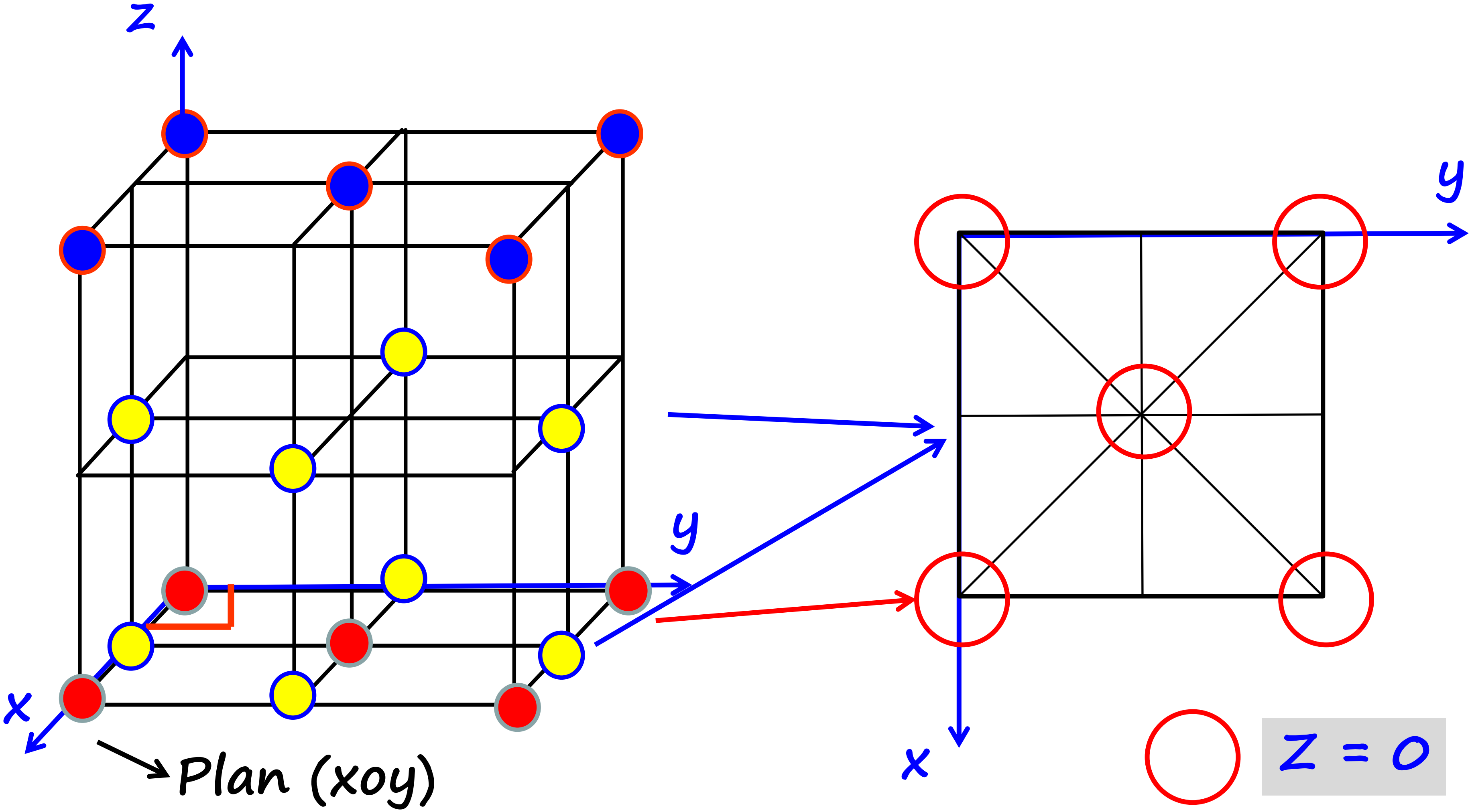
(1/2 , 0, 1/2)

(0 , 1/2 , 1/2)

(1/2 , 1/2 , 0)

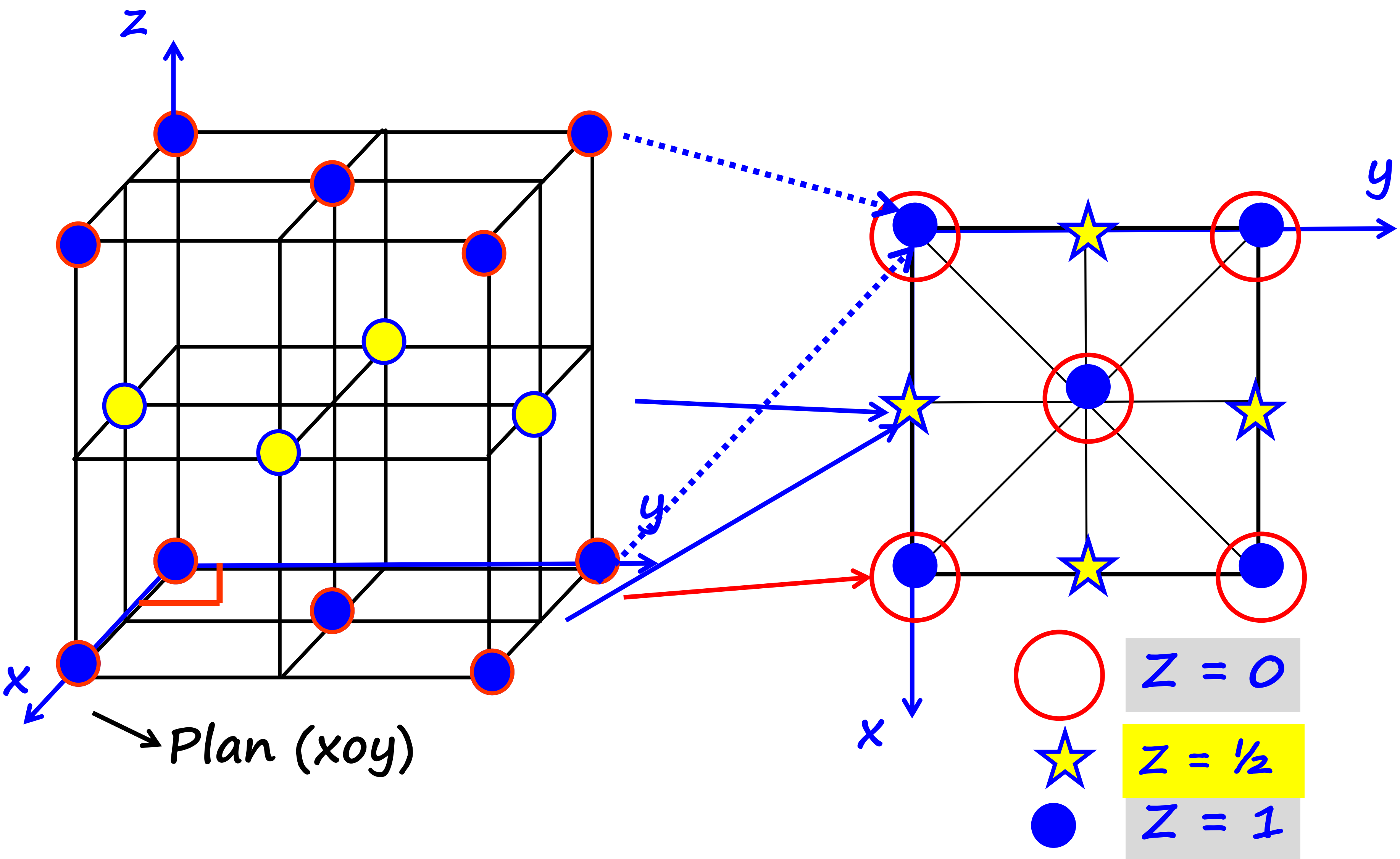
Structure Cubique à faces centrées, CFC

Mode du réseau cubique: Mode F



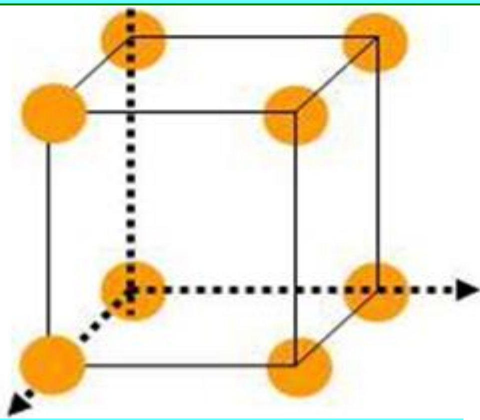
Structure Cubique à faces centrées, CFC

Mode du réseau cubique: Mode F



Résumé

Cubique simple, Mode P



coord. = 6

$\tau = 0{,}52$

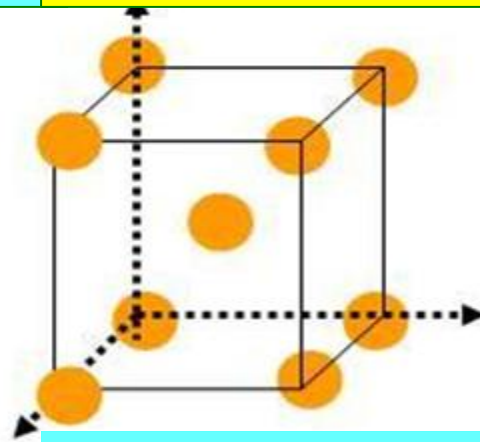
1 at./maille

$2R = a$

Coordonnées réduites

(0, 0, 0)

Cubique centré, Mode I



coord. = 8

$\tau = 0{,}68$

2 at./maille

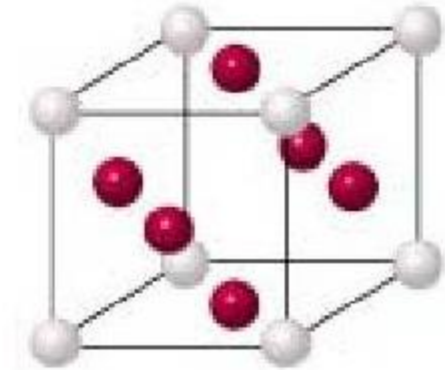
$4R = a\sqrt{3}$

Coordonnées réduites

(0, 0, 0)

(1/2, 1/2, 1/2)

CFC, Mode F



coord. = 12

$\tau = 0{,}74$

4 at./maille

$4R = a\sqrt{2}$

Coordonnées réduites

(0, 0, 0)

(1/2, 1/2, 0)

(1/2, 0, 1/2)

(0, 1/2, 1/2)