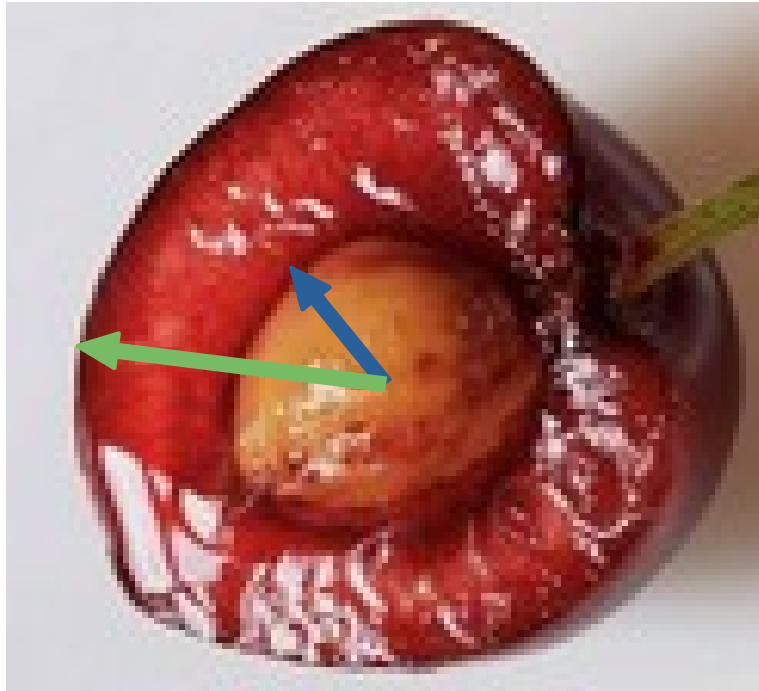


ILE 2026

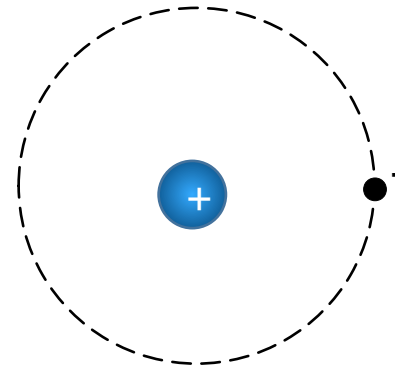
Groupe : Des Noyaux aux Étoiles
(D'où vient les noyaux?)

Mohamad Moukaddam

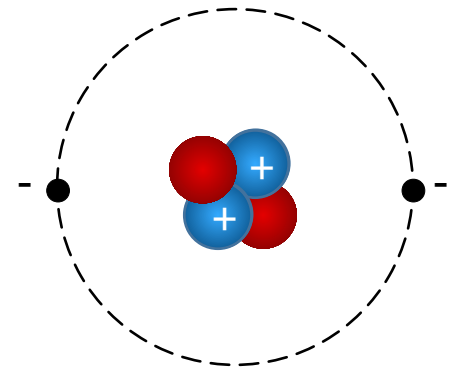
Atome et noyau



${}^1_1\text{H}$

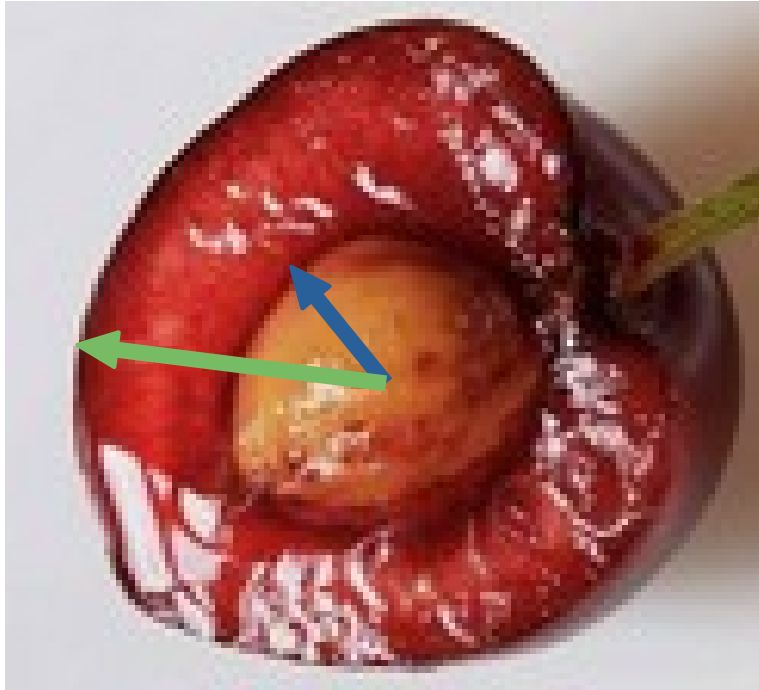


${}^2_2\text{He}$

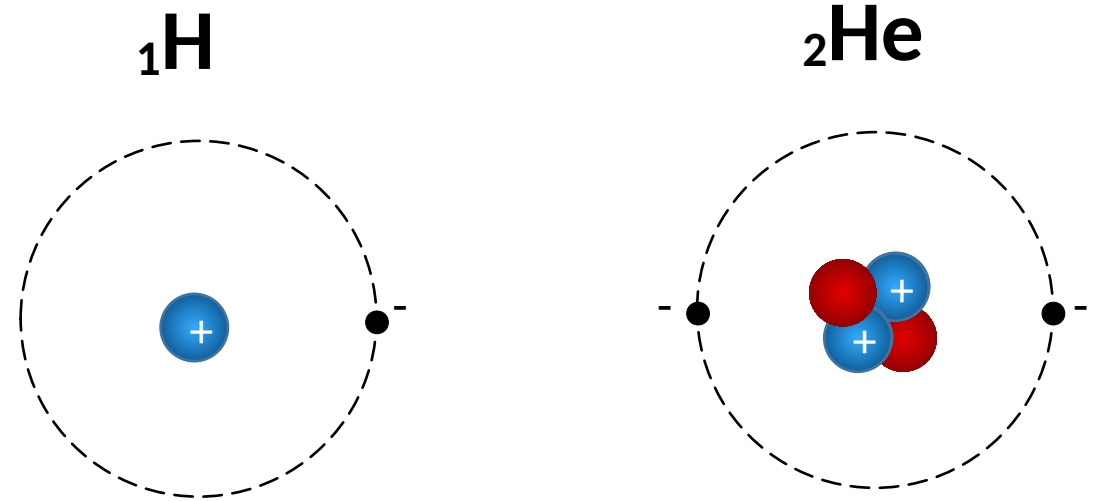


le noyau est ~2 fois plus petit

Atome et noyau



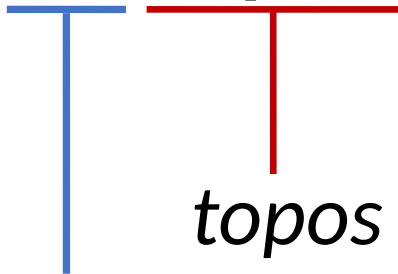
le noyau est ~2 fois plus petit



~26000 plus petit !

Donc si l'électron est absorbé pour le noyau
La matière occupe ~1000'000'000 moins d'espace!

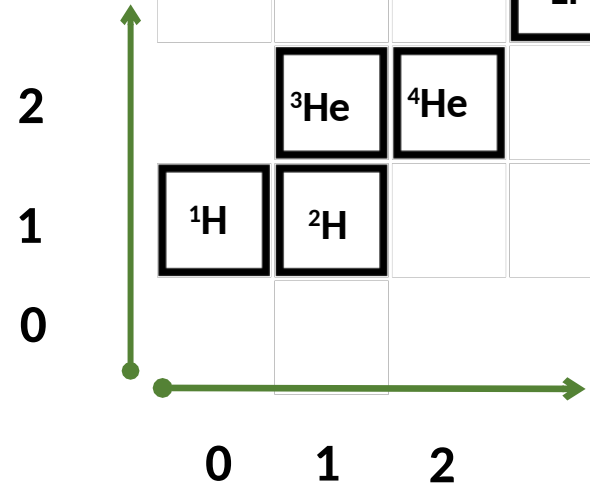
Les isotopes



topos = place

isos = égale

Nb. de protons



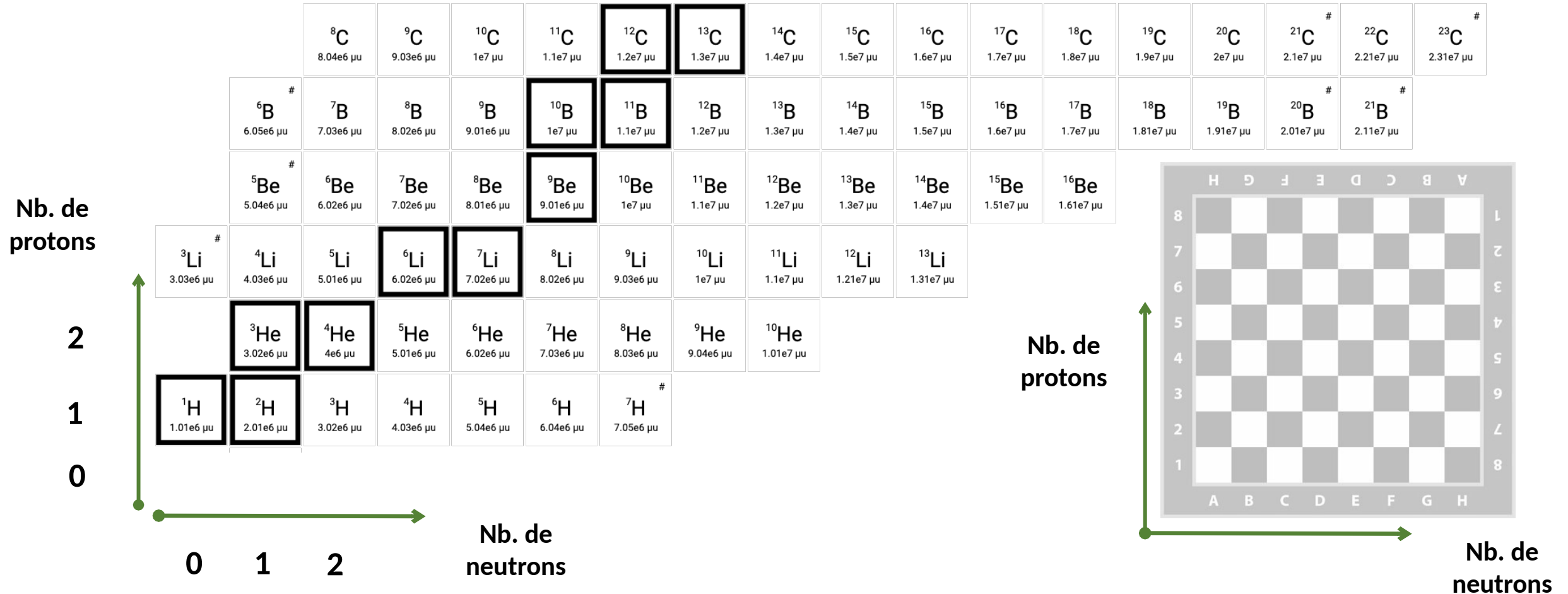
Nb. de neutrons

1	1	2																	18	
1	H																			2
2	Li	Be																		10
3	Na	Mg																		18
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr		36
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe		54
6	Cs	Ba	*	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn		86
7	Fr	Ra	**	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og		118
	Lanthanides*		57	58	59	60	61	62	63	64	65	66	67	68	69	70	71			
			La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu			
	Actinides**		89	90	91	92	93	94	95	96	97	98	99	100	101	102	103			
			Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr			

- **118 éléments chimiques**
 - Le plus léger : Hydrogène (Z=1)
 - Le plus lourd : Oganesson (Z=118)
- **~3300 Noyaux**

Les isotopes

y en assez pour tout le monde...



Désintégration beta

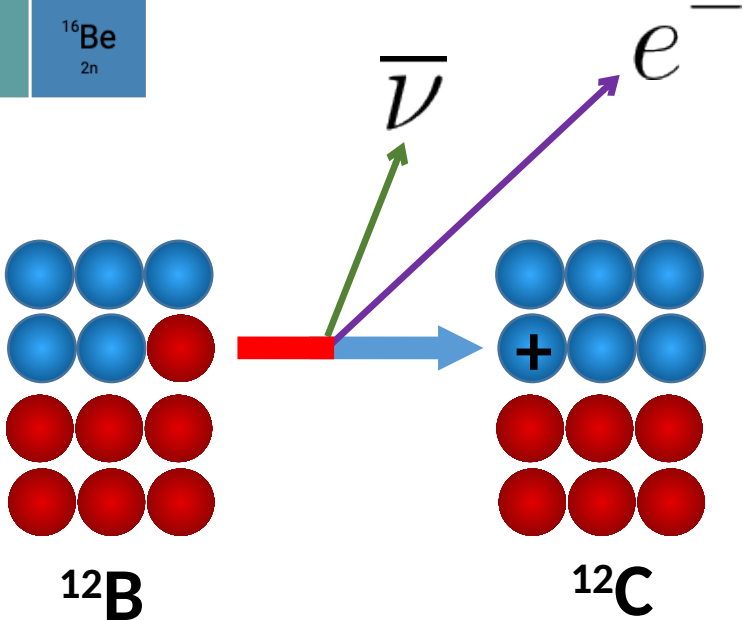
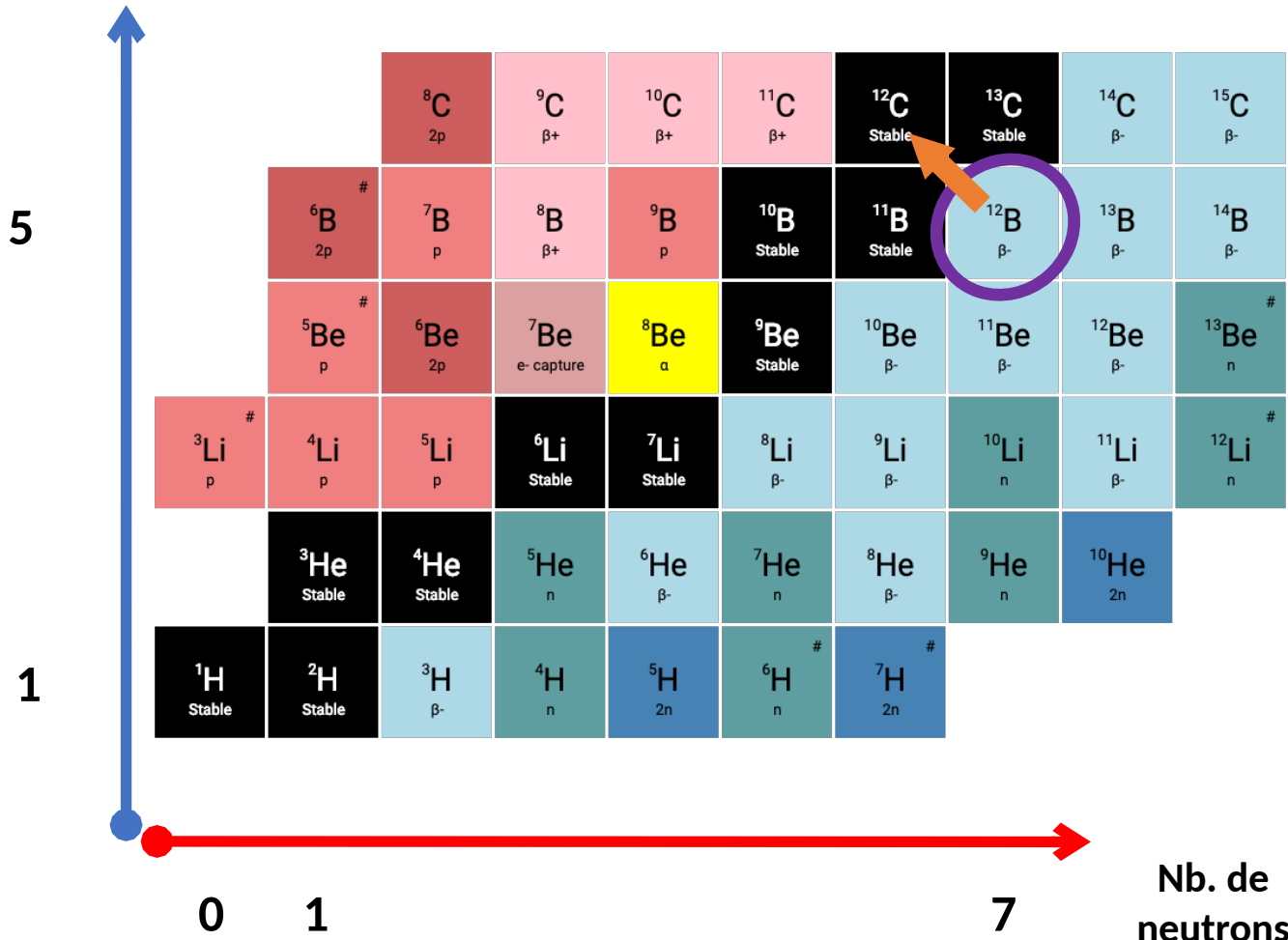


Désintégration beta

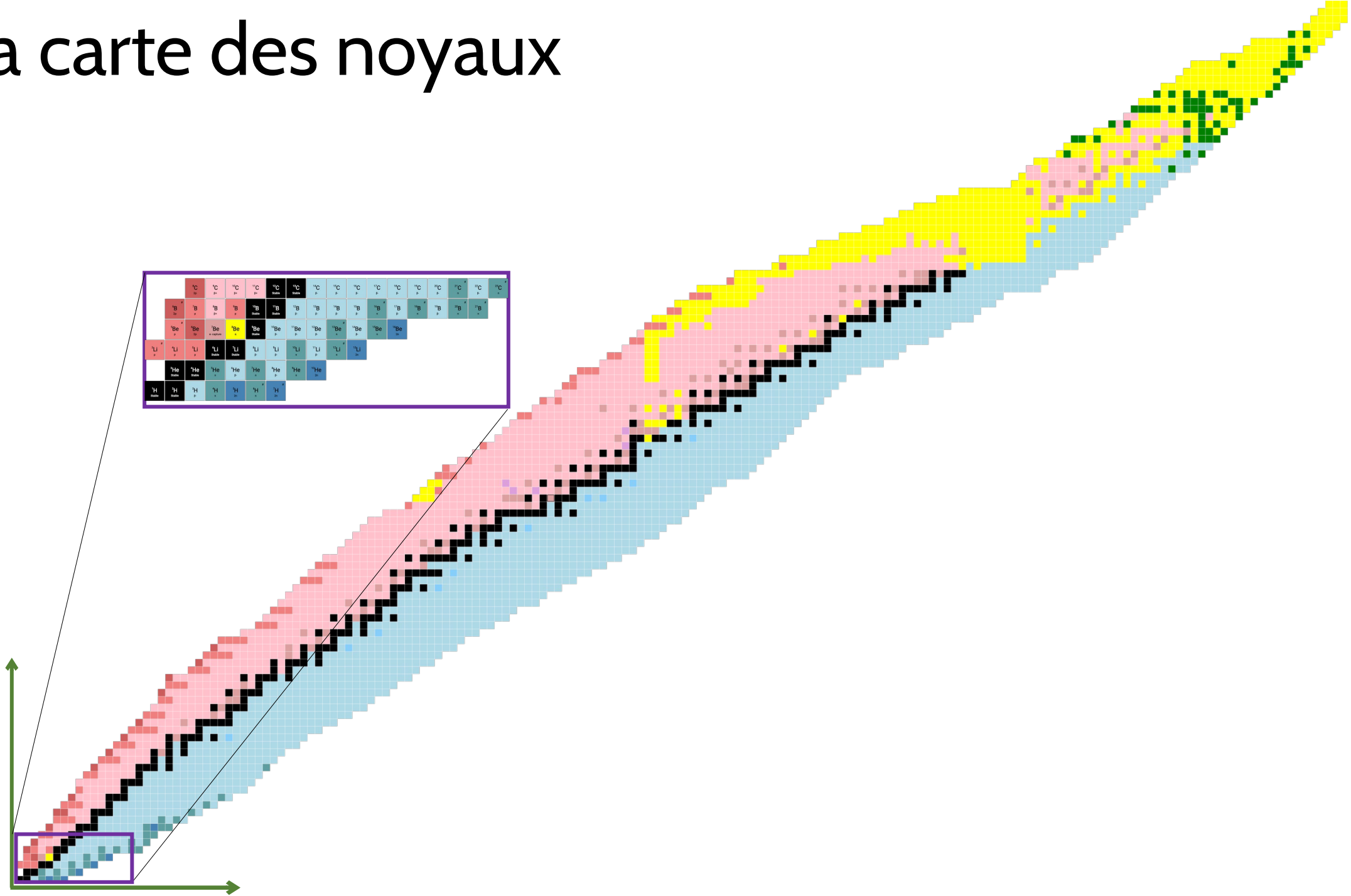
$$n \rightarrow p + e^{-} + \bar{\nu}$$

$$p \rightarrow n + e^{+} + \nu$$

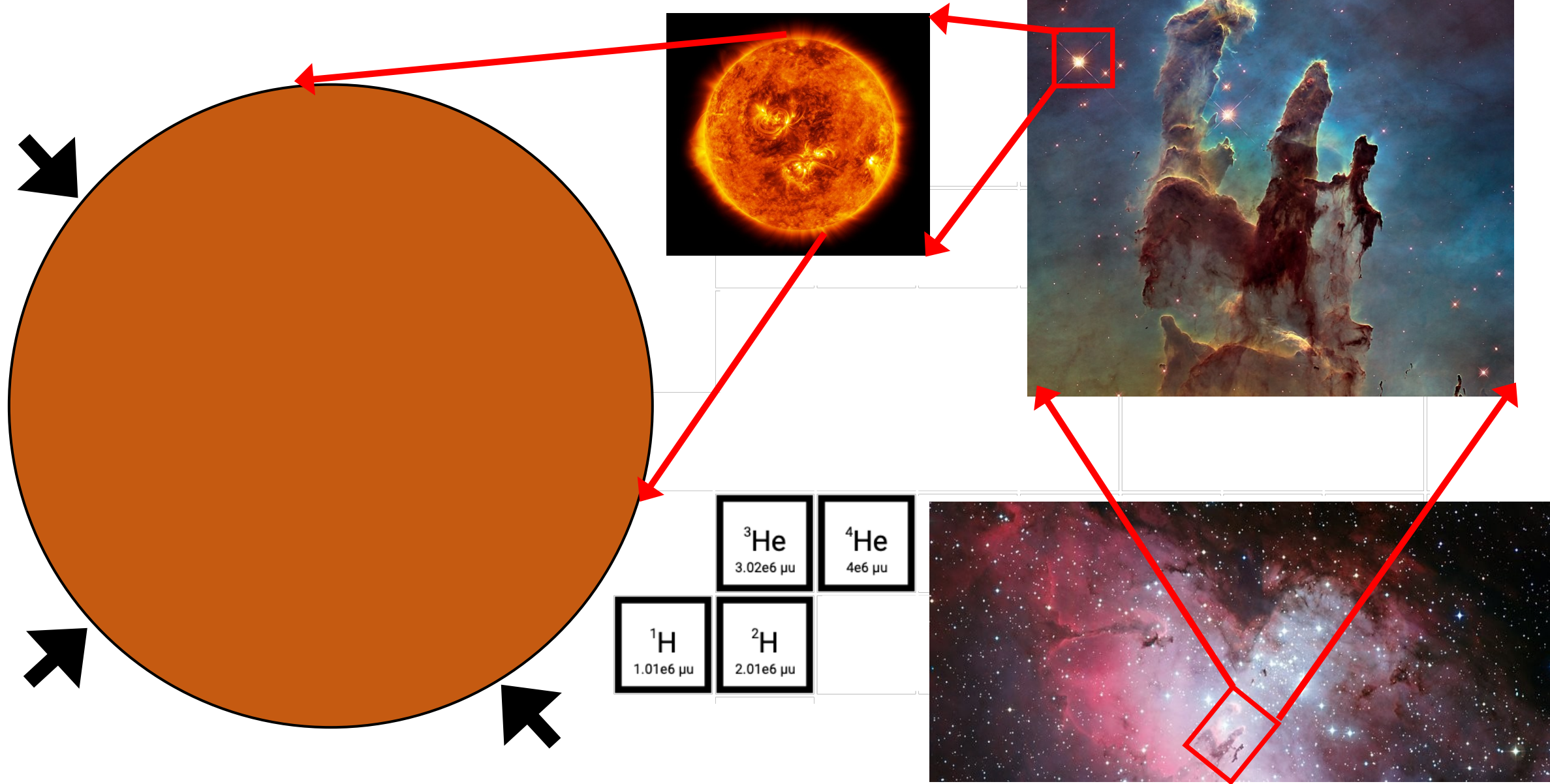
Nb. de protons



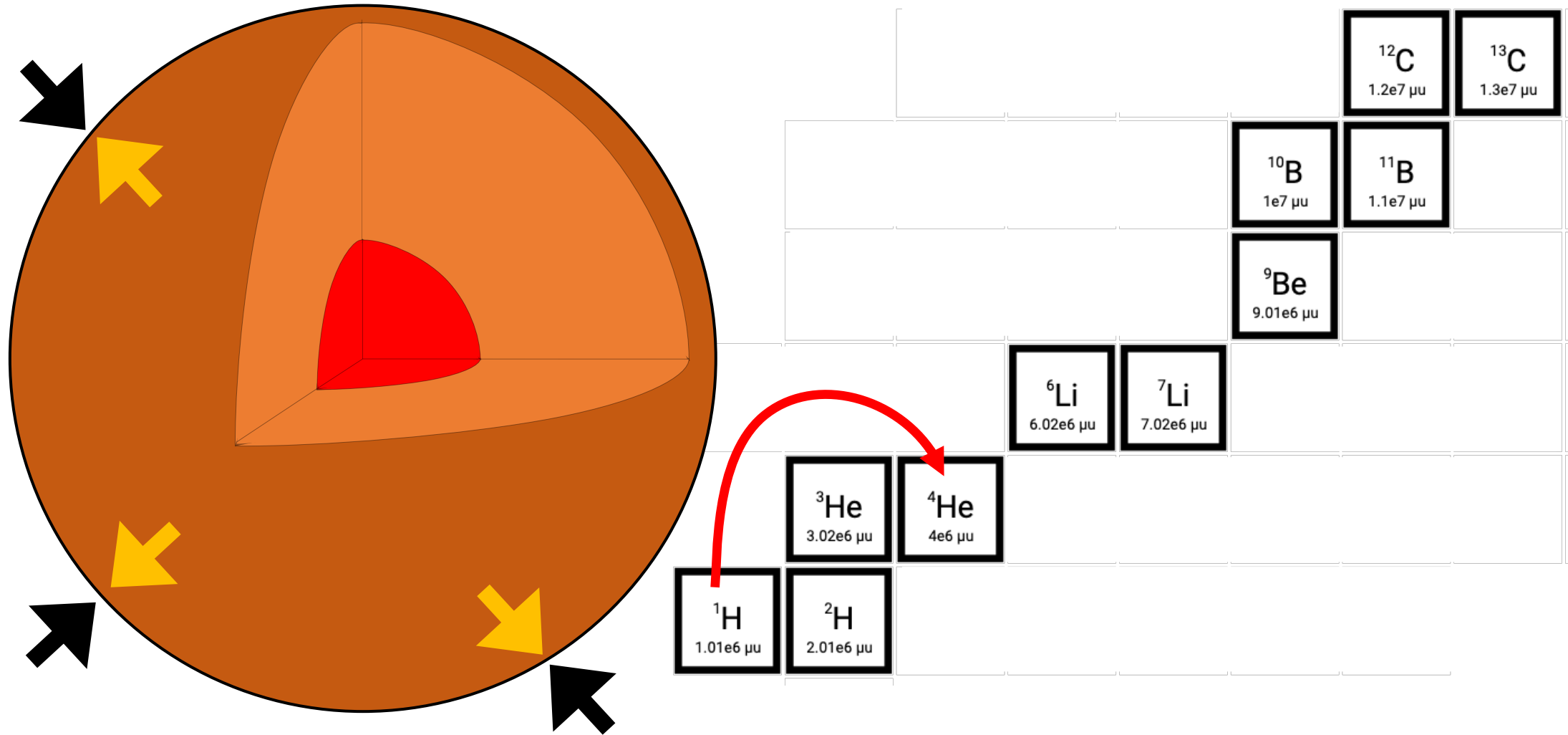
La carte des noyaux



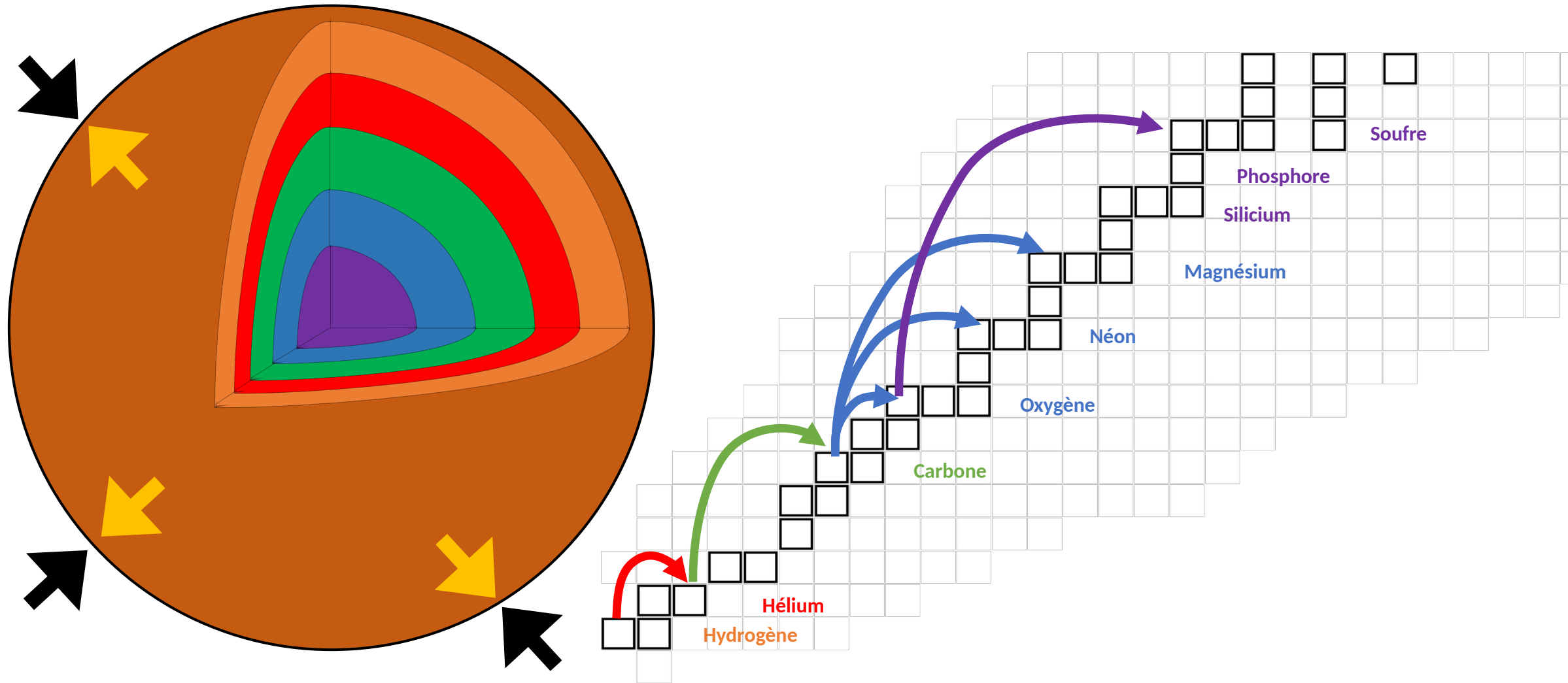
la synthèse des noyaux



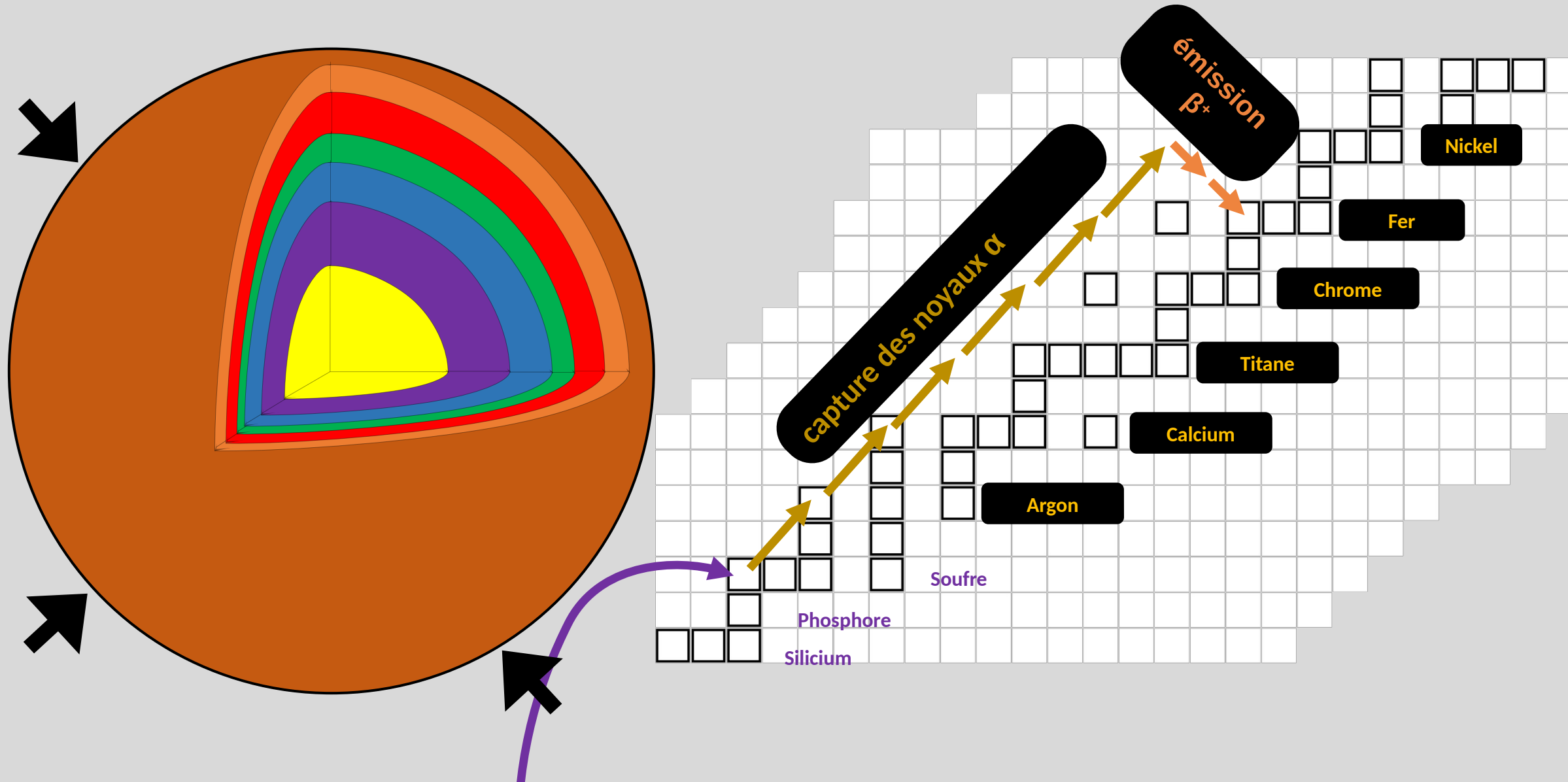
la synthèse des noyaux



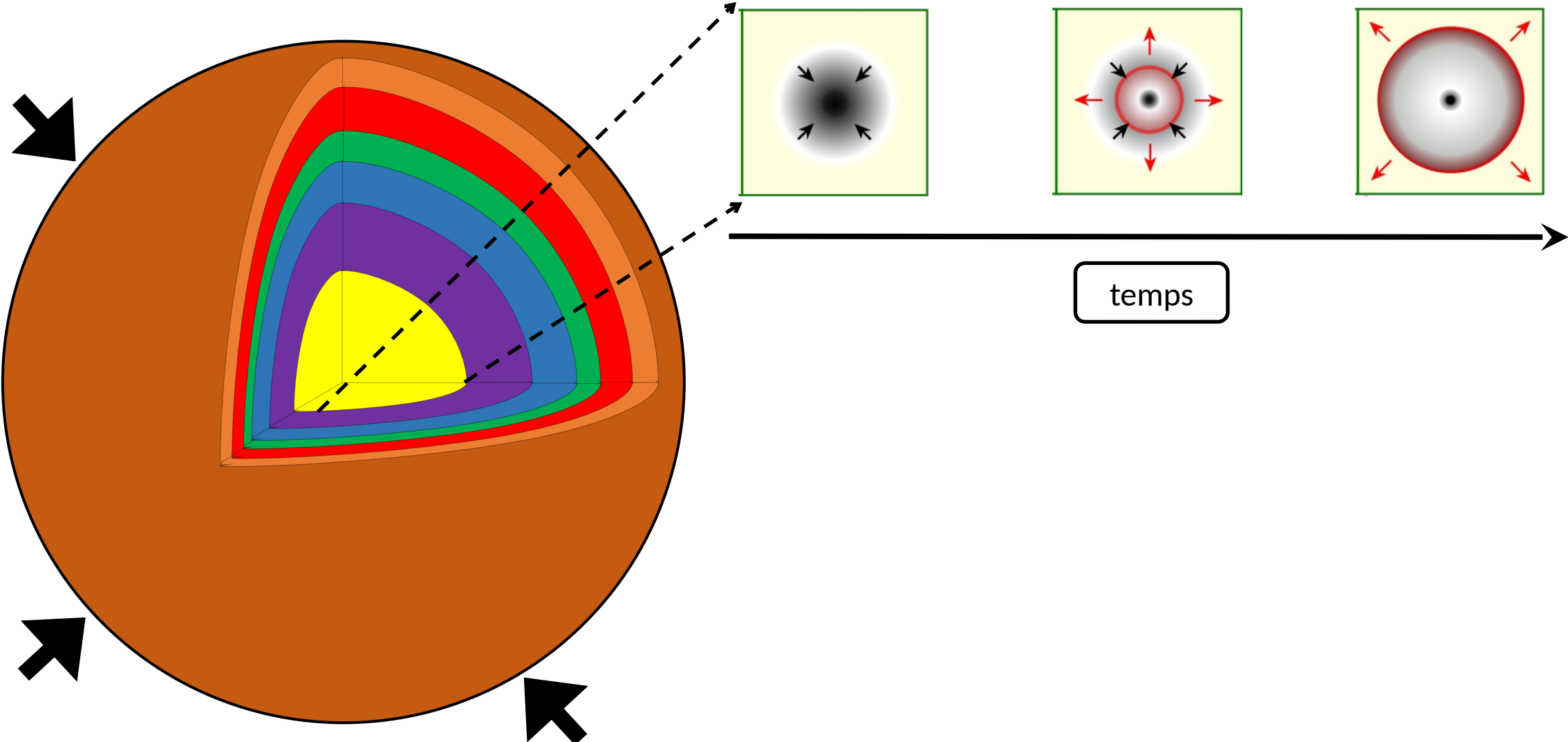
la synthèse des noyaux



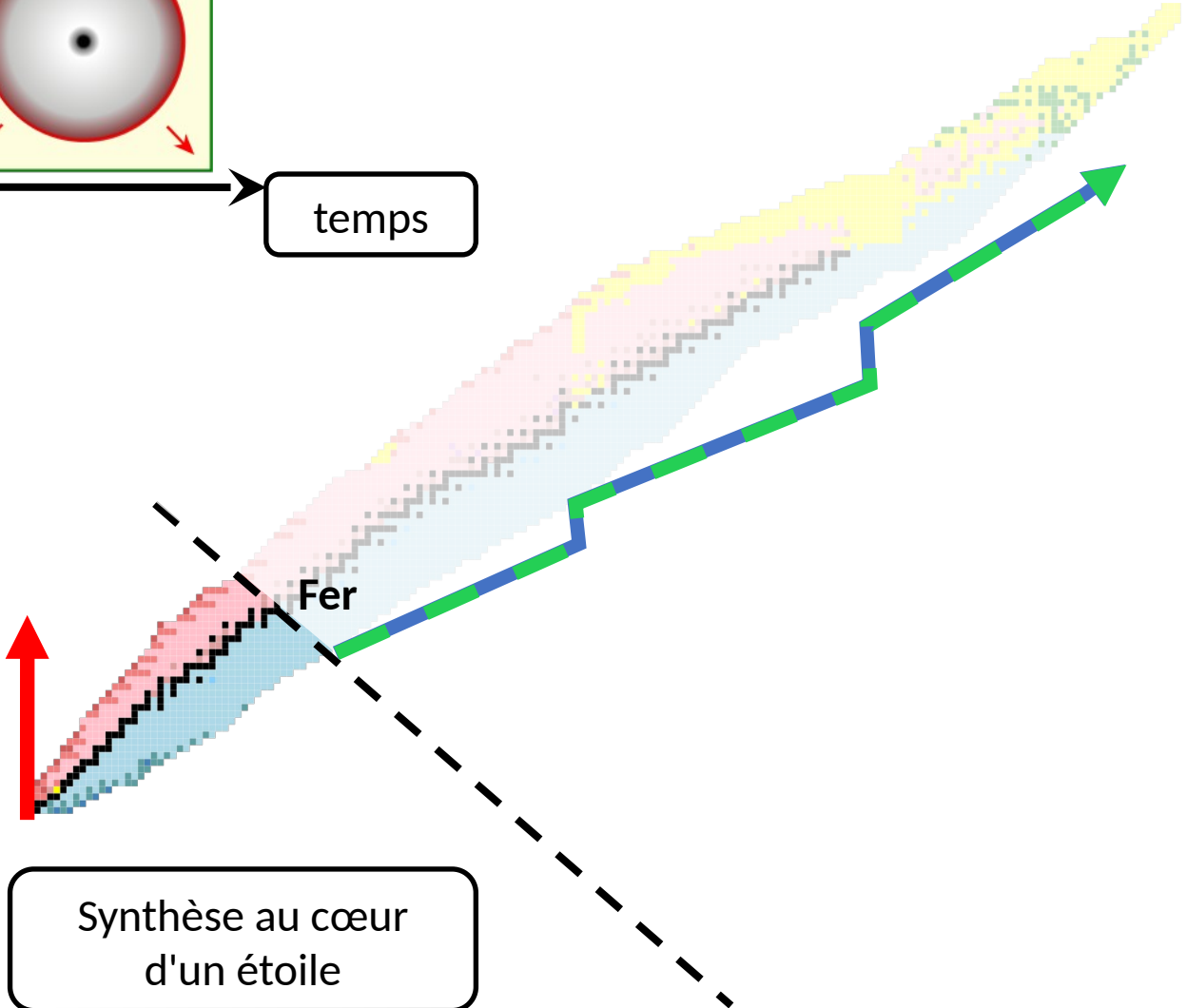
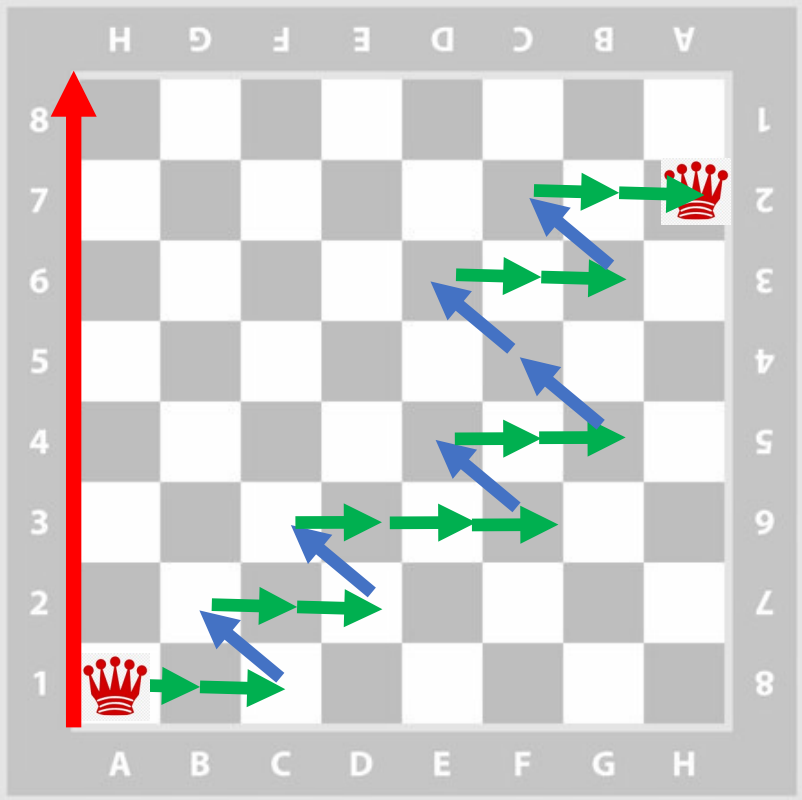
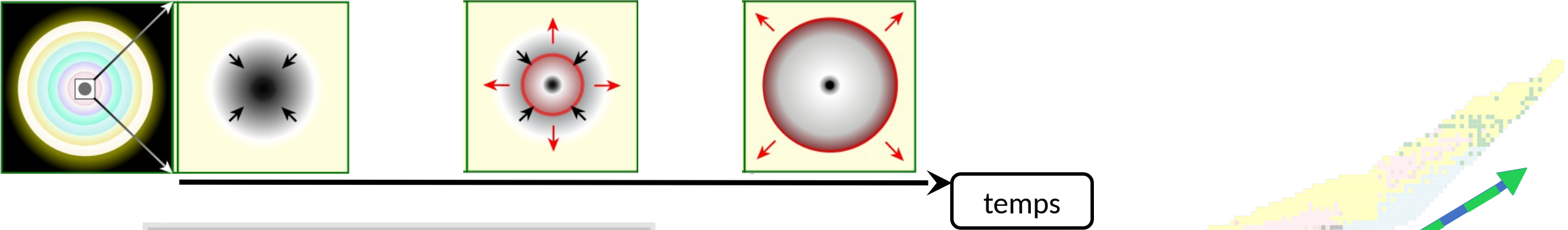
la synthèse des noyaux

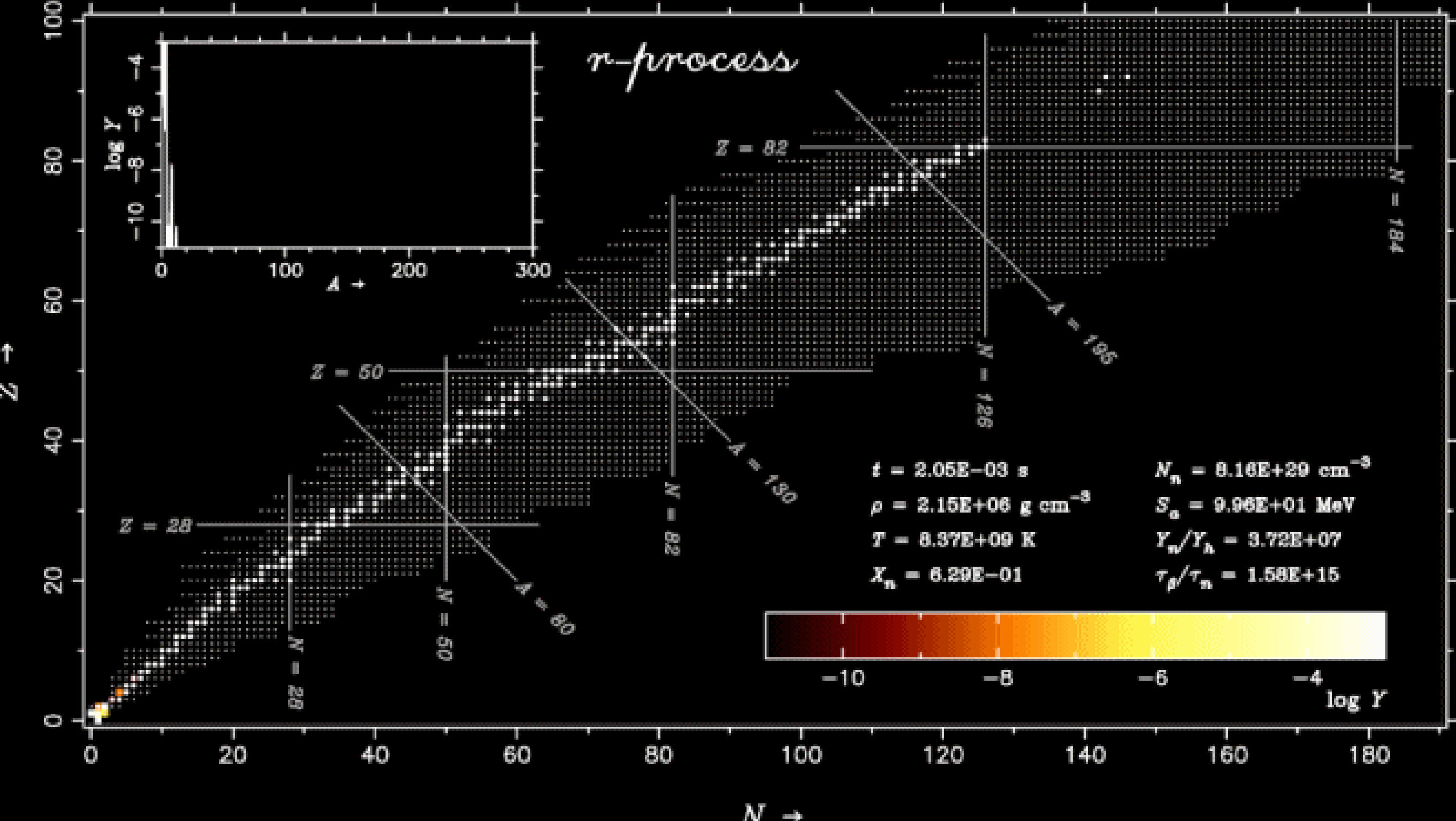


La mort d'une étoile



La mort spectaculaire d'une étoile





La nébuleuse du Crabe associée
au supernova de 1054 A.D.



Questions ?

