

Kärnfysik

Uppdaterad: 260310

[1] ...

[2] ...

[3] ...

[4] ...

[15] ...

Har jag använt någon bild som jag inte får använda? Låt mig veta så tar jag bort den.
christian.karlsson@ckfysik.se

[14]

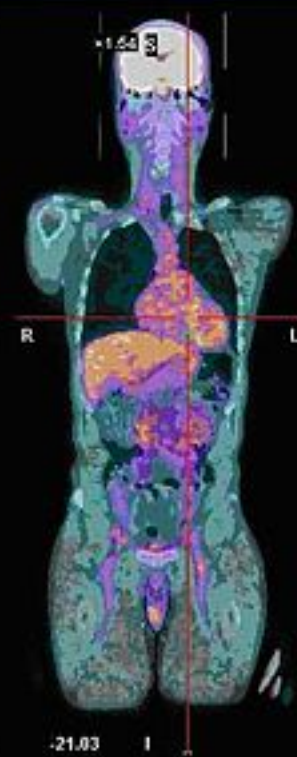
[13]



CT Coronals



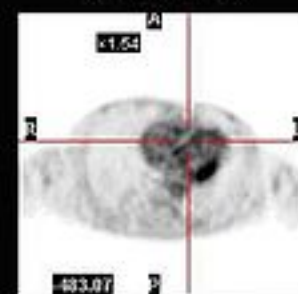
PET Coronals



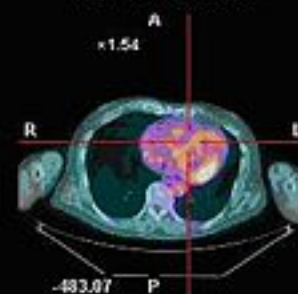
Fused Coronals



CT Transaxials



PET Transaxials



Fused Transaxials



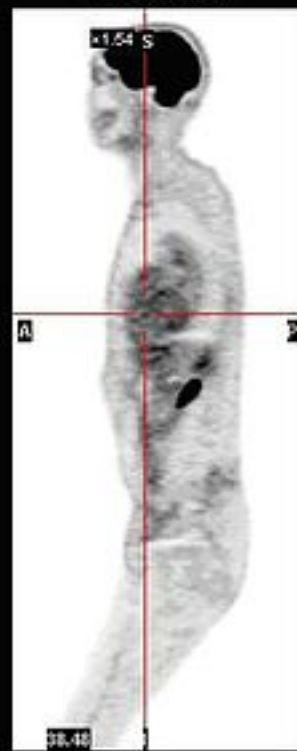
Scout View



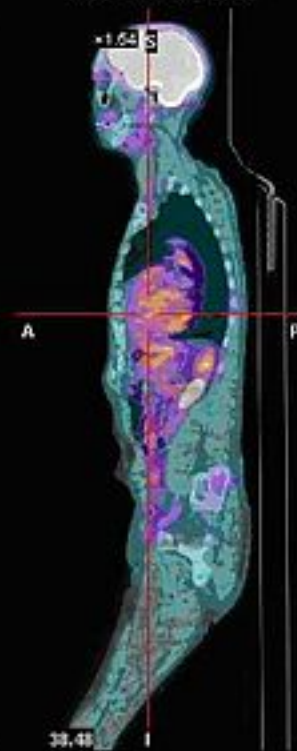
MIP Navigate



CT Sagittals



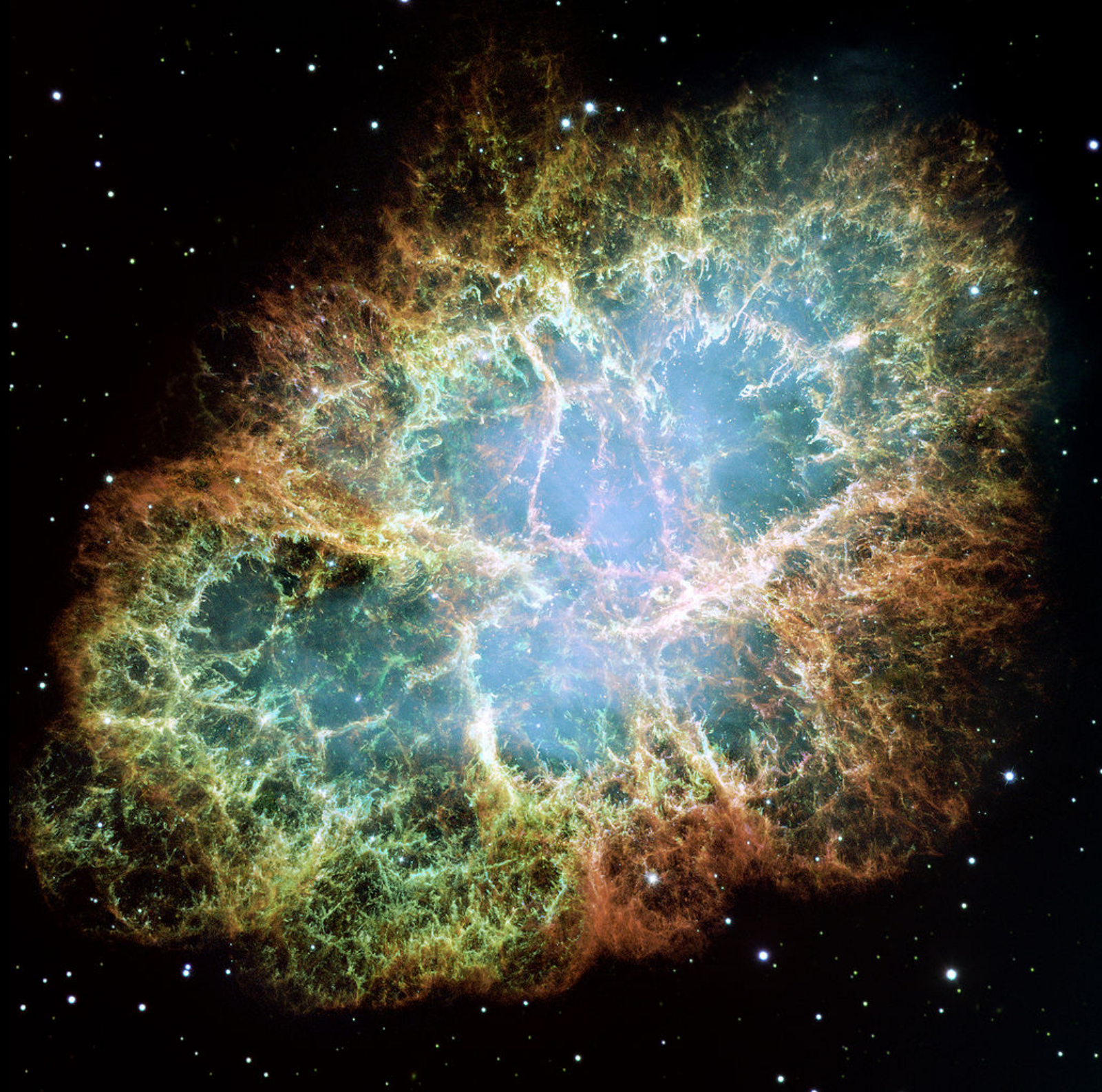
PET Sagittals



Fused Sagittals







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 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba		72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra																
			57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
			89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu									

short-lived radioactive isotopes; nothing left from stars

Big Bang fusion



cosmic ray fission



merging neutron stars?



exploding massive stars



dying low-mass stars



exploding white dwarfs

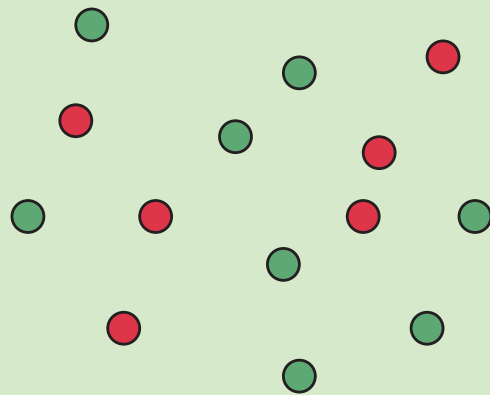


This periodic table, color-coded to indicate the way each element is formed, distills the work of astronomers over the course of the past century—and it continues to be updated with new discoveries. This information is useful in a variety of scientific pursuits, such as studying how the Milky Way formed.

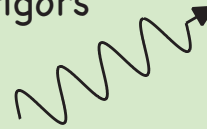


[4]

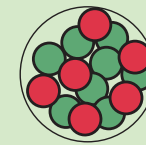
C-kärnans beståndsdelar
långt ifrån varandra
(i fritt tillstånd):



Energi frigörs



C-kärna



Lägre energi
-mindre massa
(ty $E = mc^2$)

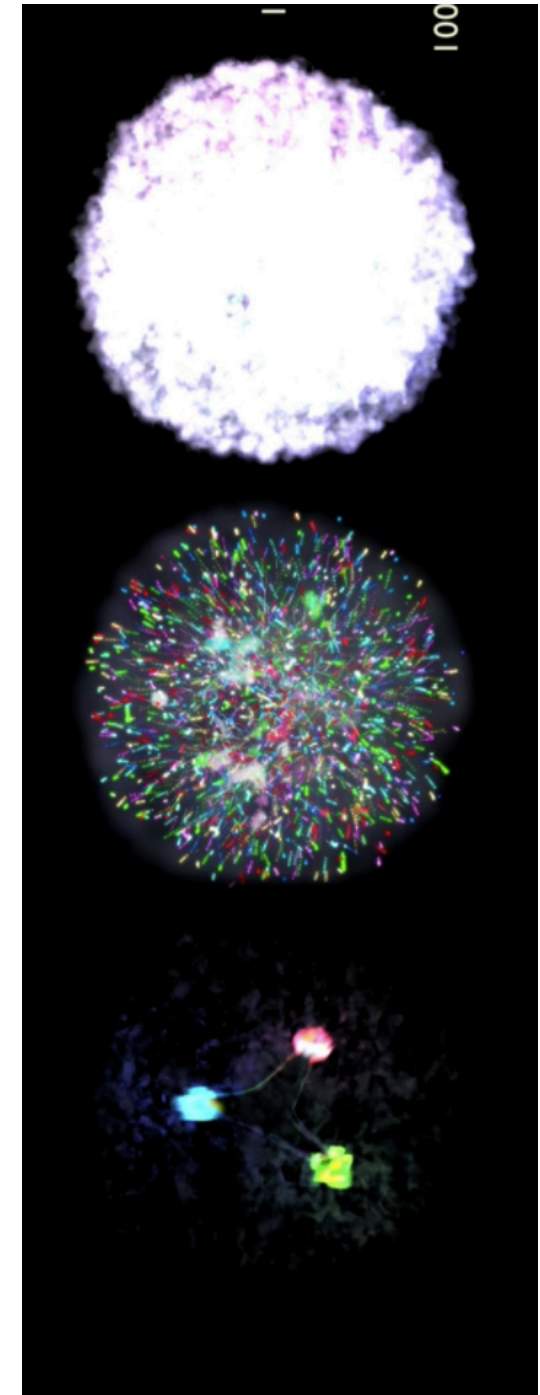
Energi tillförs



Standard Model of Elementary Particles

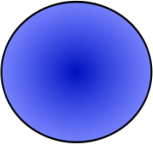
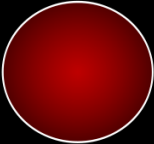
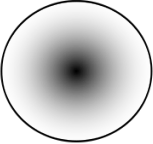
three generations of matter (fermions)			interactions / force carriers (bosons)	
	I	II	III	
mass	$\approx 2.2 \text{ MeV}/c^2$	$\approx 1.28 \text{ GeV}/c^2$	$\approx 173.1 \text{ GeV}/c^2$	$\approx 125.11 \text{ GeV}/c^2$
charge	$\frac{2}{3}$	$\frac{2}{3}$	$\frac{2}{3}$	0
spin	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	0
QUARKS	u up	c charm	t top	g gluon
	d down	s strange	b bottom	γ photon
	e electron	μ muon	τ tau	Z Z boson
LEPTONS	ν_e electron neutrino	ν_μ muon neutrino	ν_τ tau neutrino	W W boson
			SCALAR BOSONS	
			GAUGE BOSONS VECTOR BOSONS	

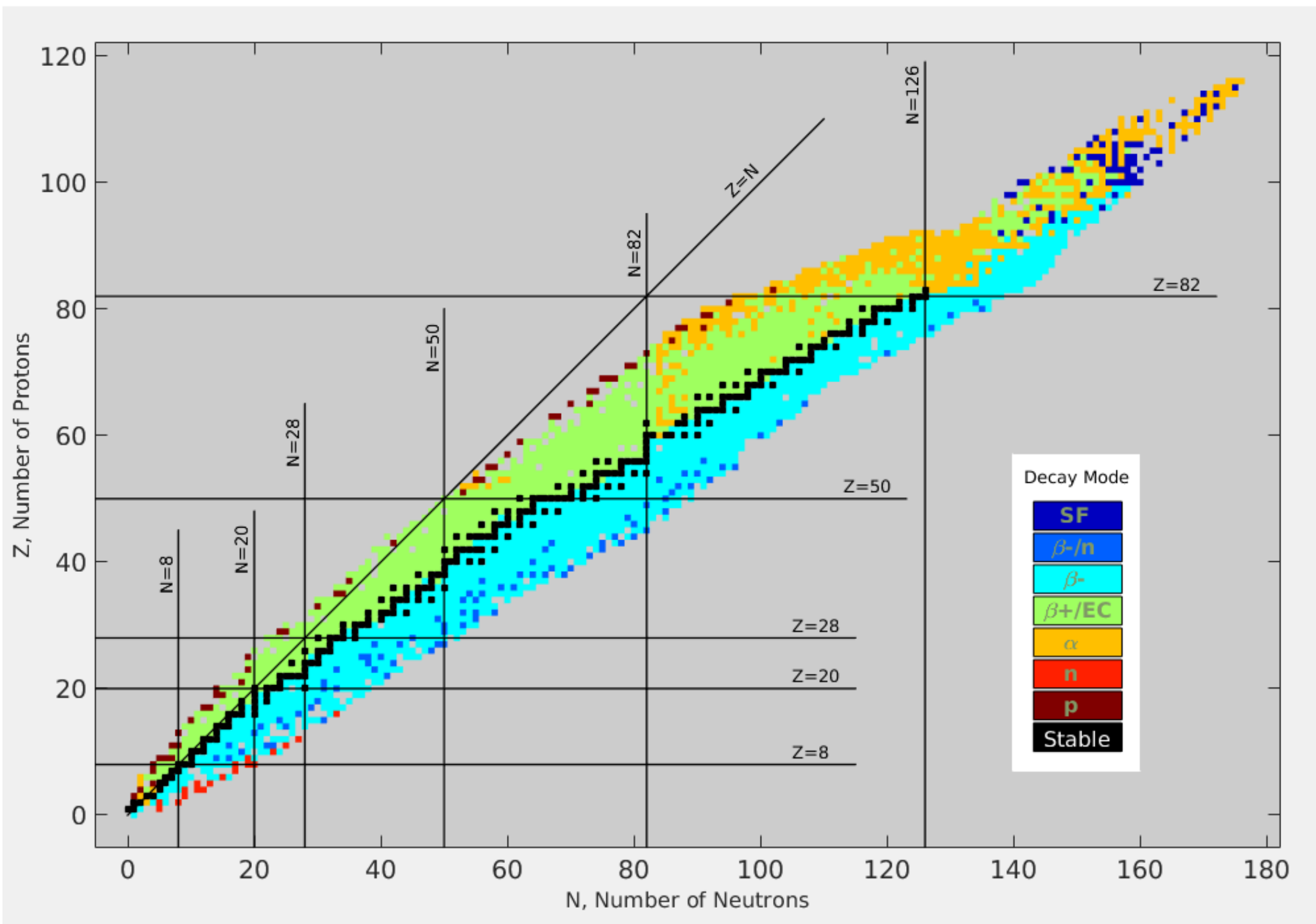
[5]



[6]

Materia och antimateria

elektron					antielektron (positron)
proton					antiproton
neutron					antineutron





Color zones by ?
☐ value ☒ quantile

Main Decay Mode ...

- ☒ alpha
- ☒ EC+ beta+
- ☒ beta-
- ☒ p
- ☒ n
- ☒ EC
- ☒ SF
- ☒ Stable

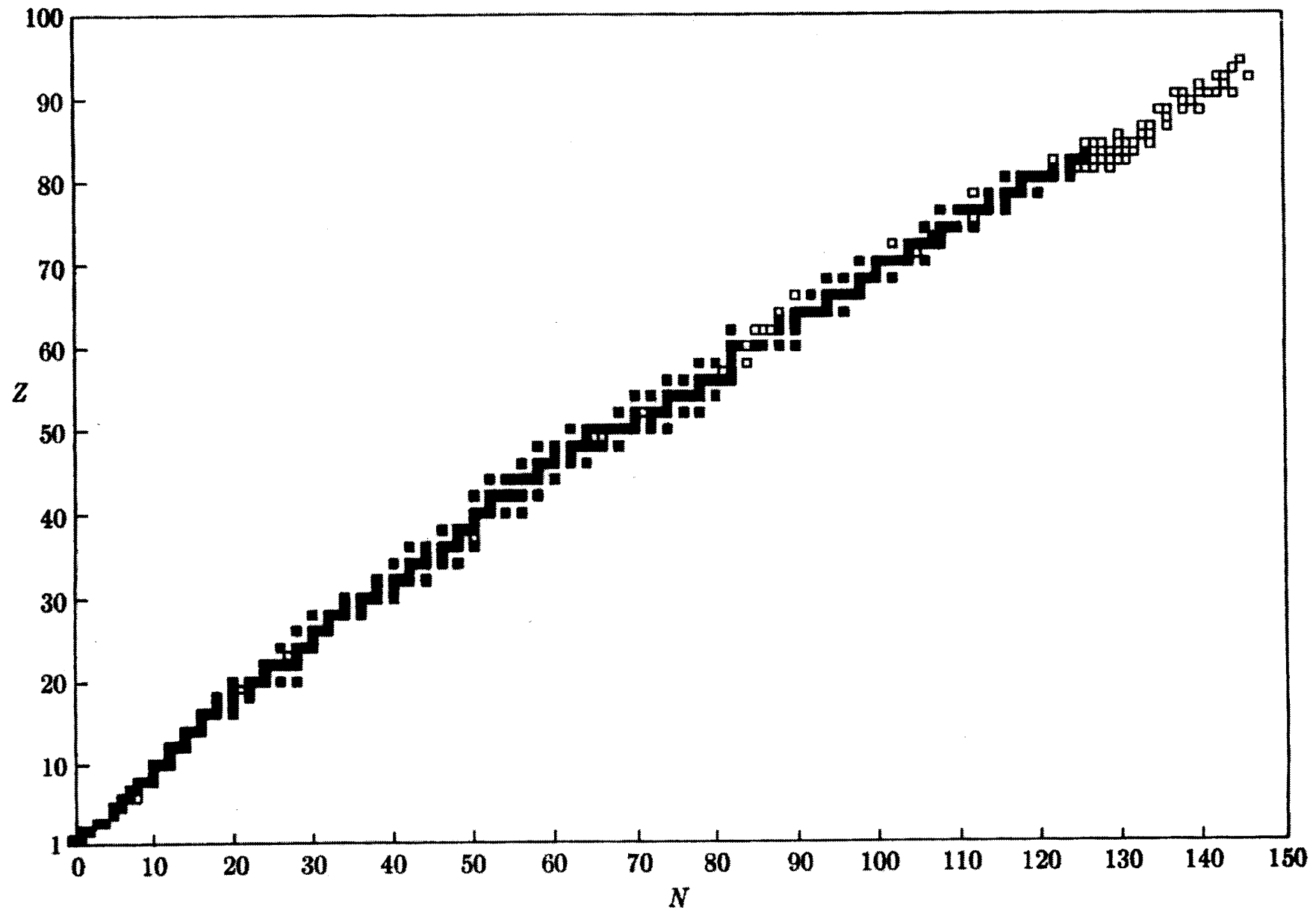
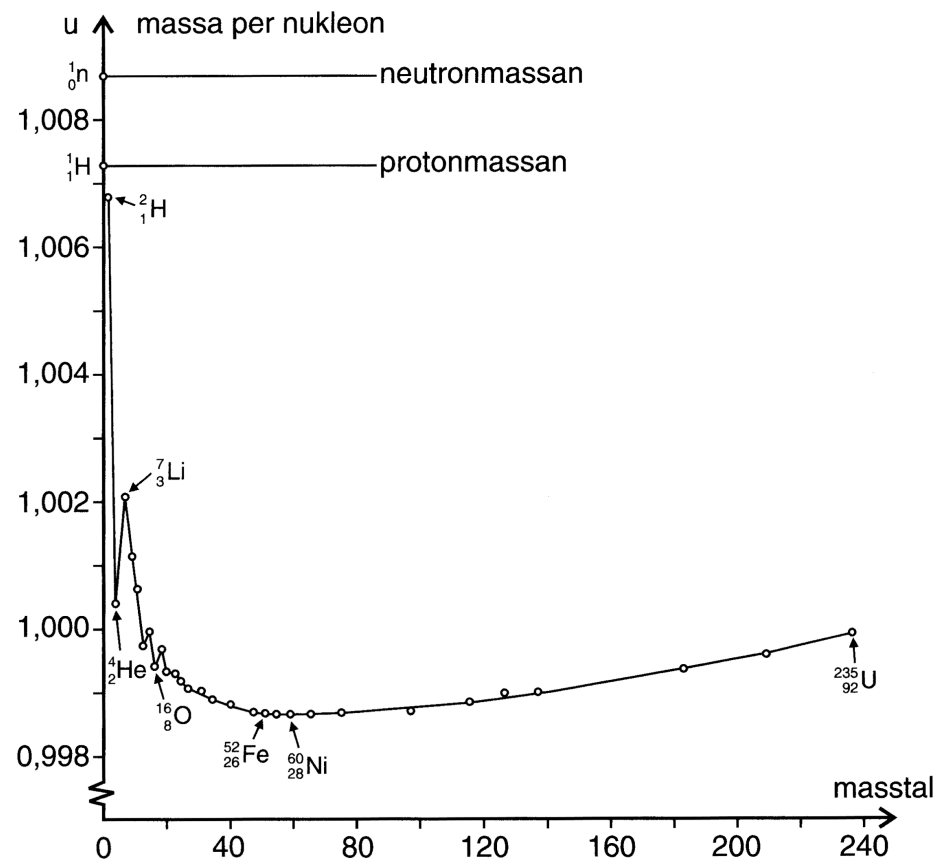
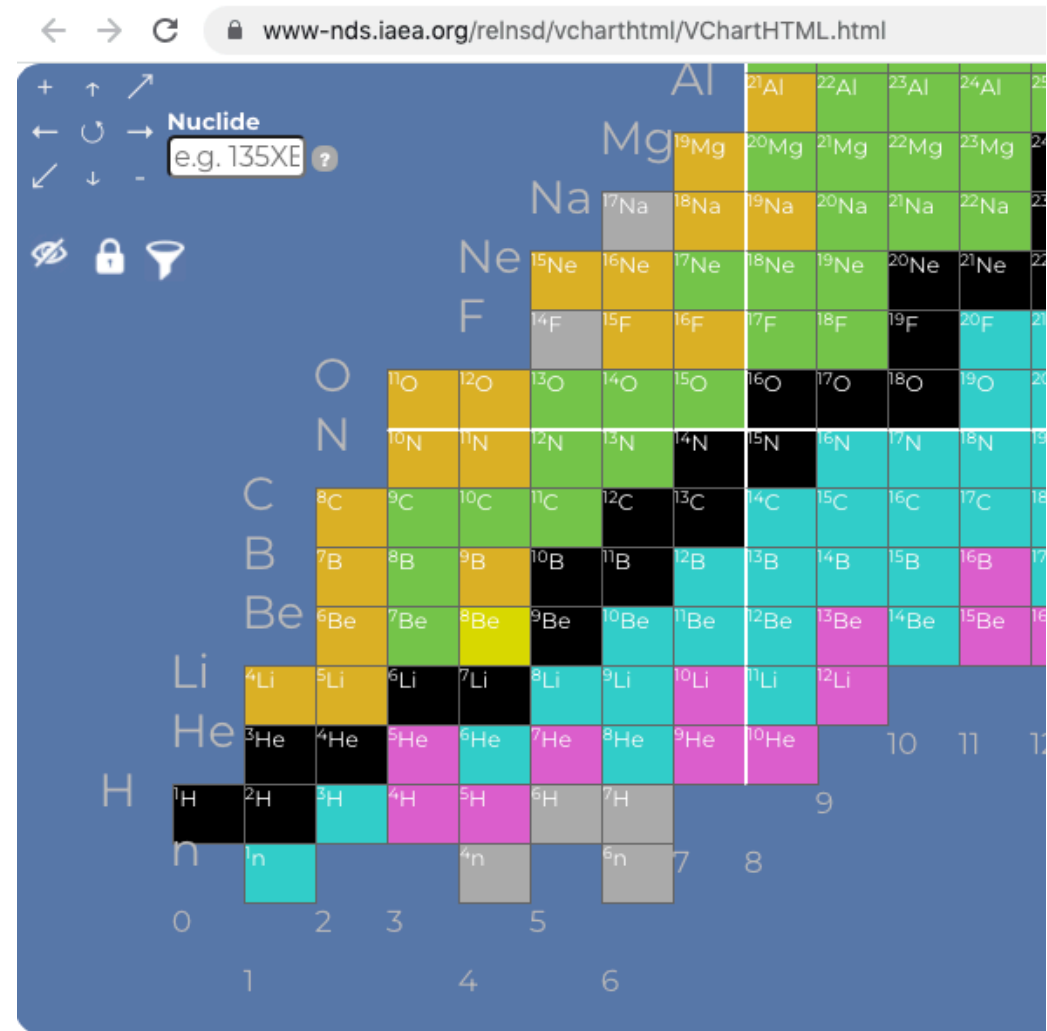


FIGURE 25.5 Nuclear chart. Dark squares indicate stable nuclei; open squares indicate unstable or radioactive nuclei found in nature. Artificially radioactive nuclei are not included in this chart.

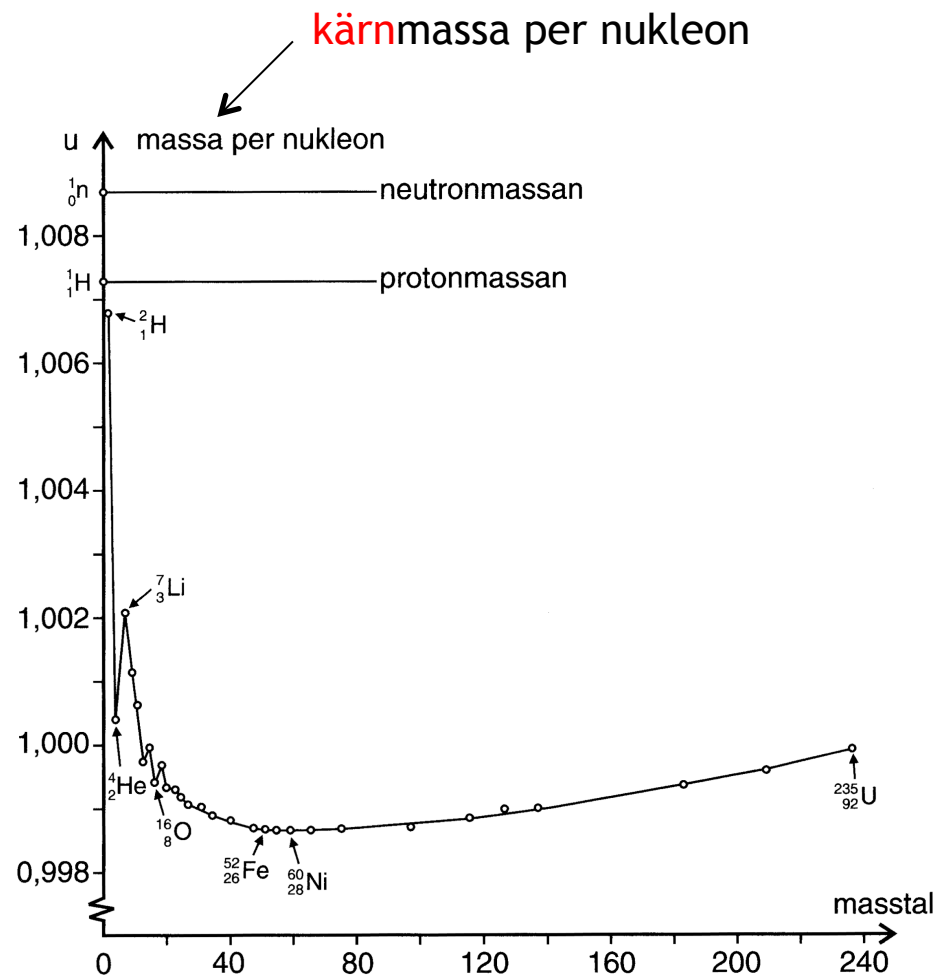
Massa per nukleon



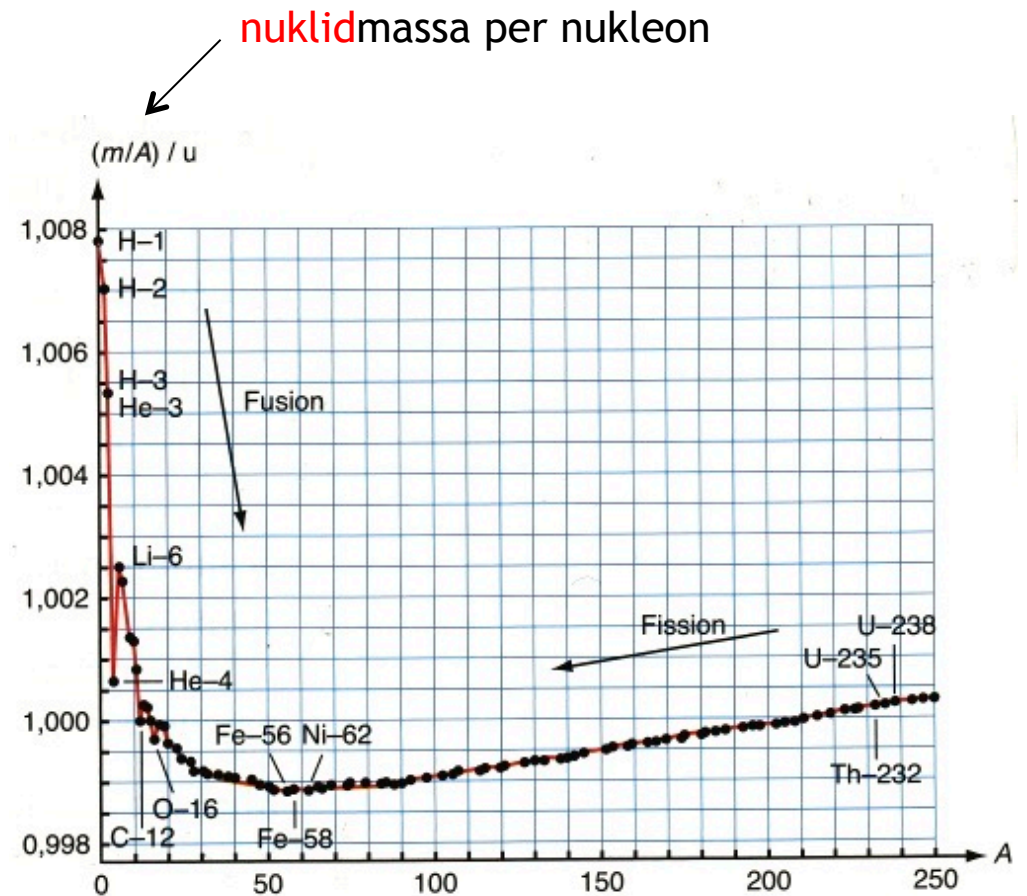
[9]



Massa per nukleon

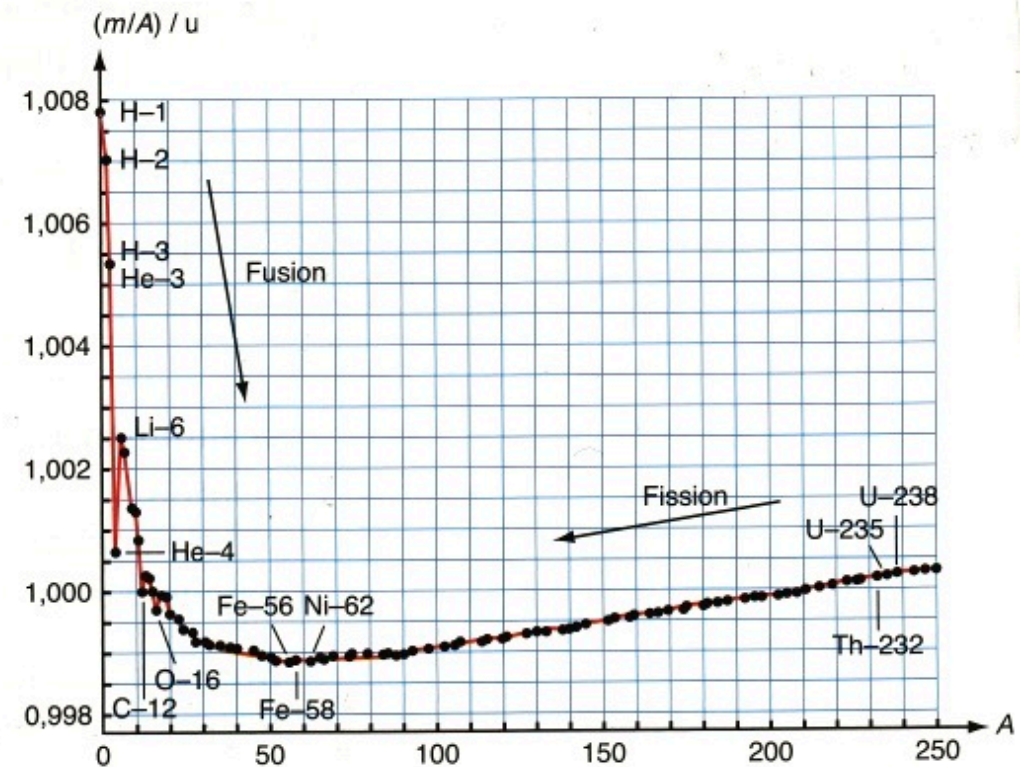
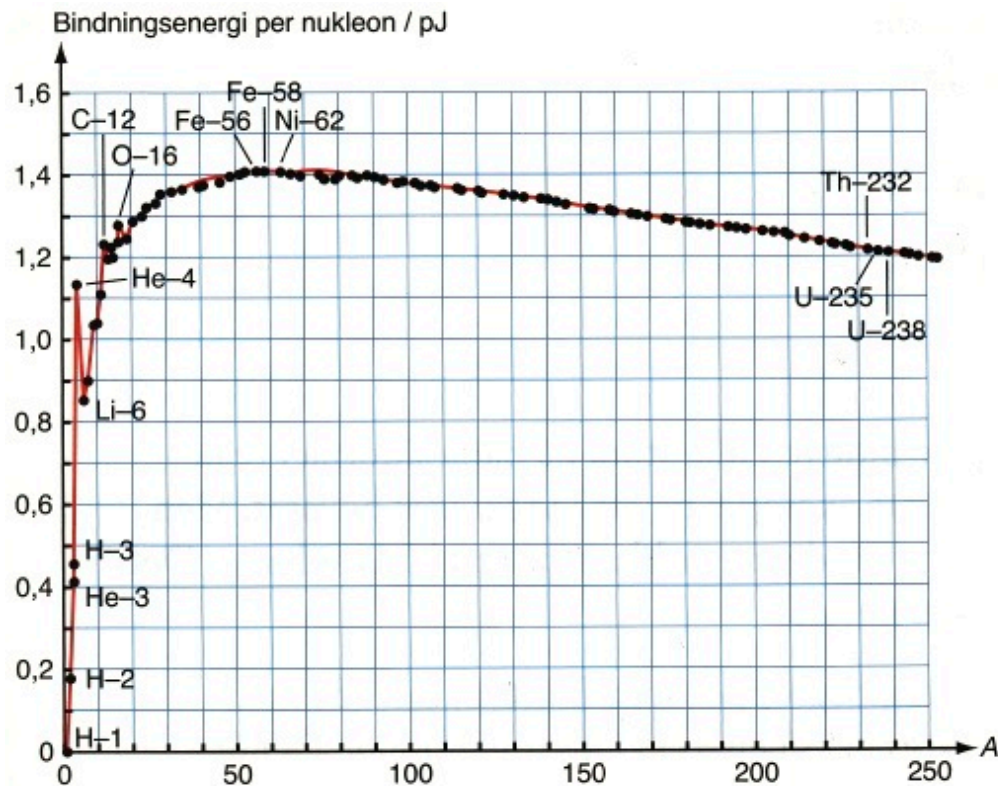
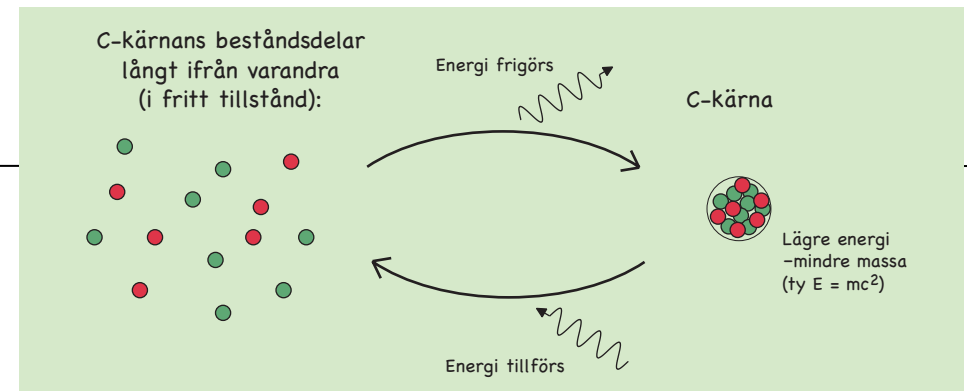


[9]

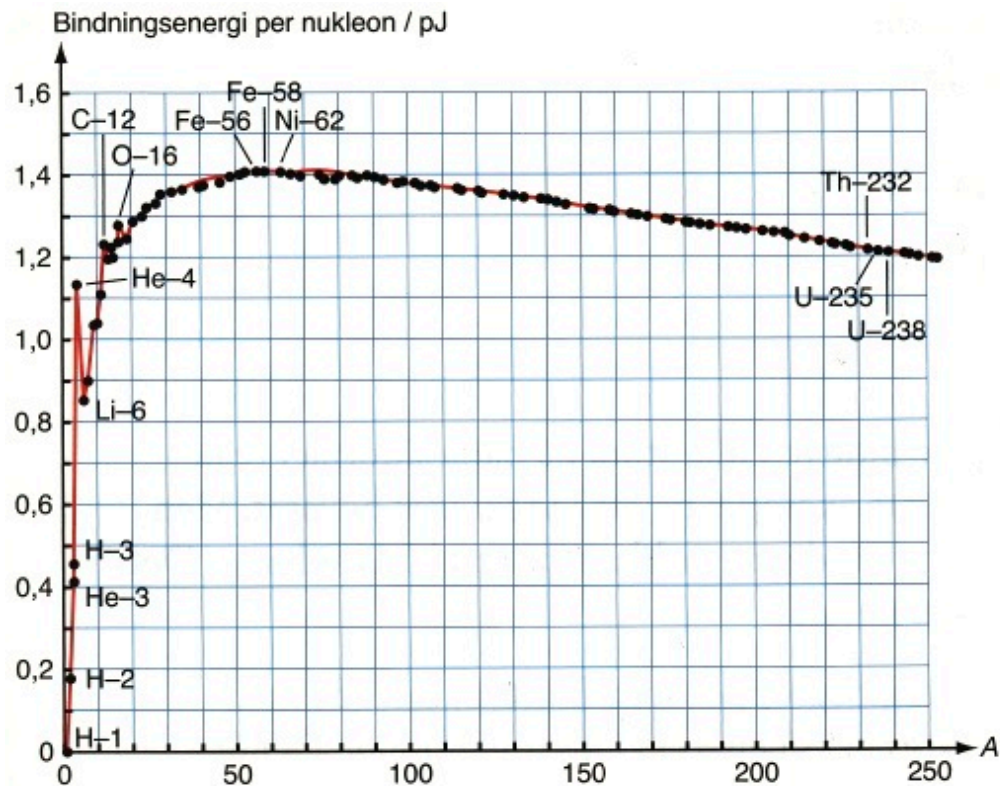
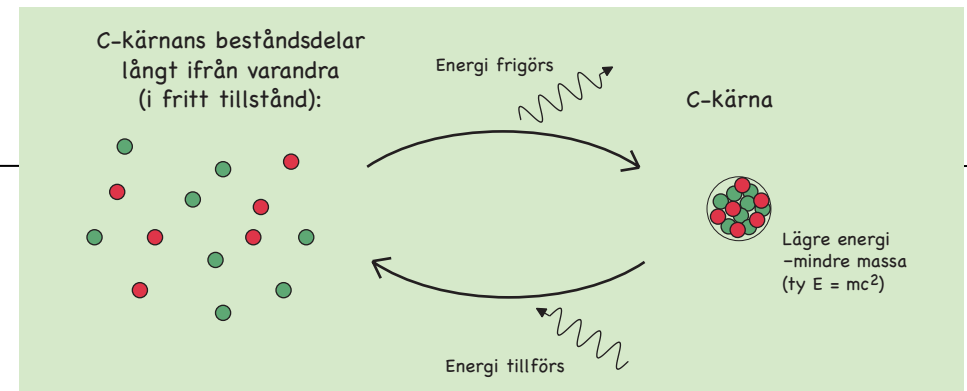


[10]

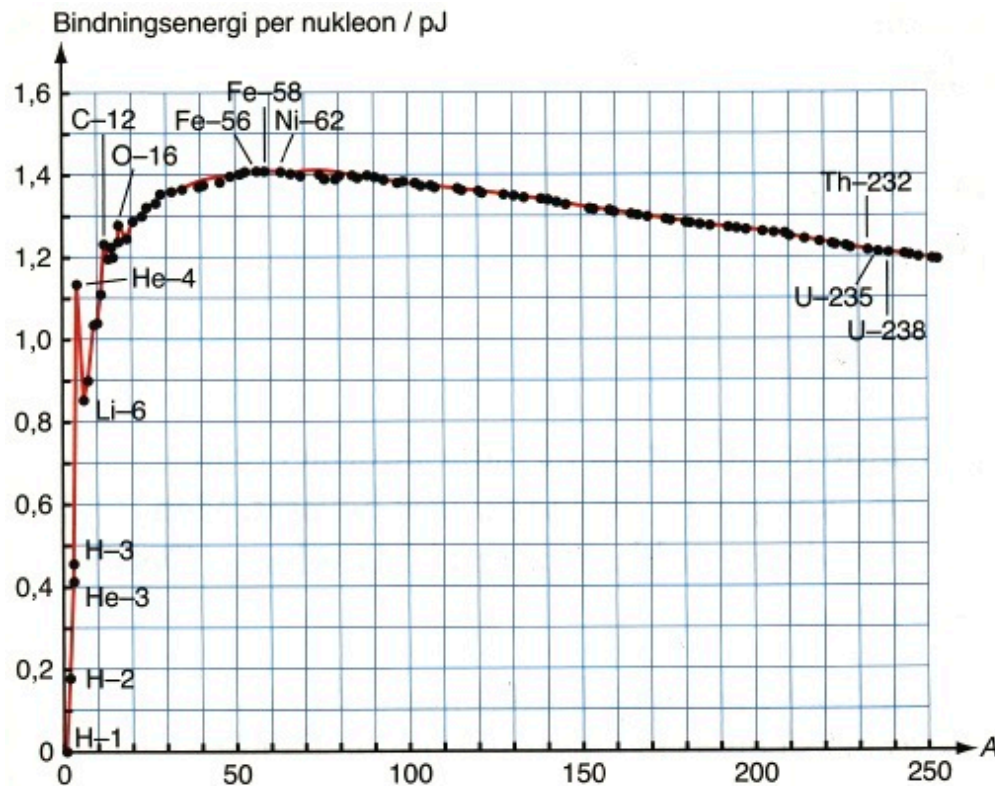
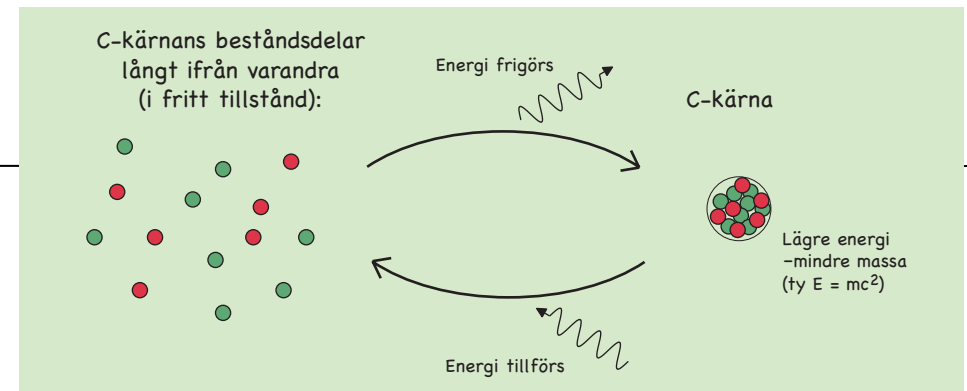
Bindningsenergi per nukleon



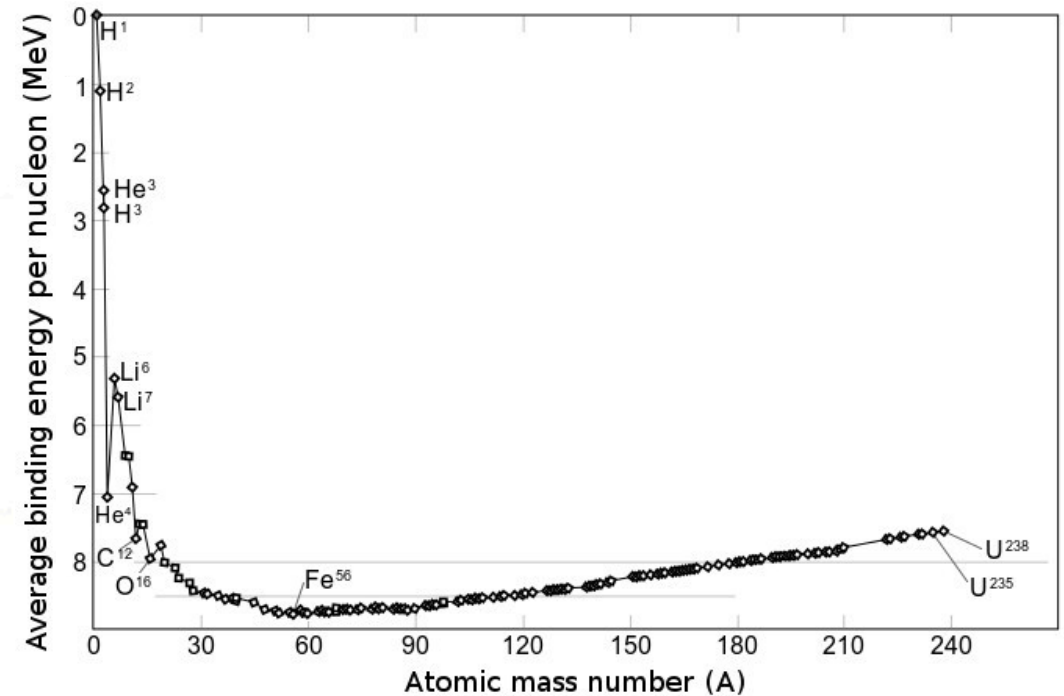
Bindningsenergi per nukleon

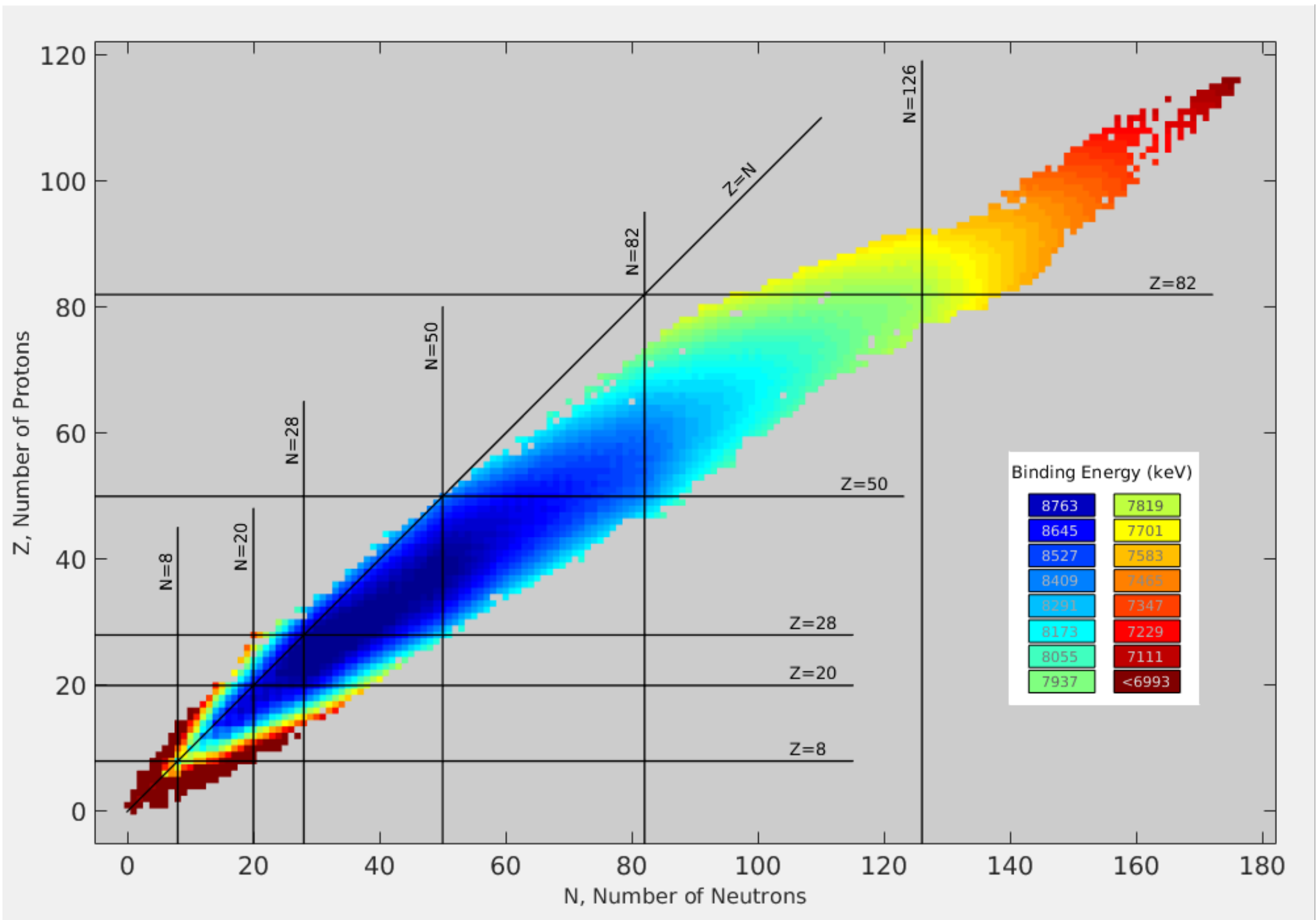


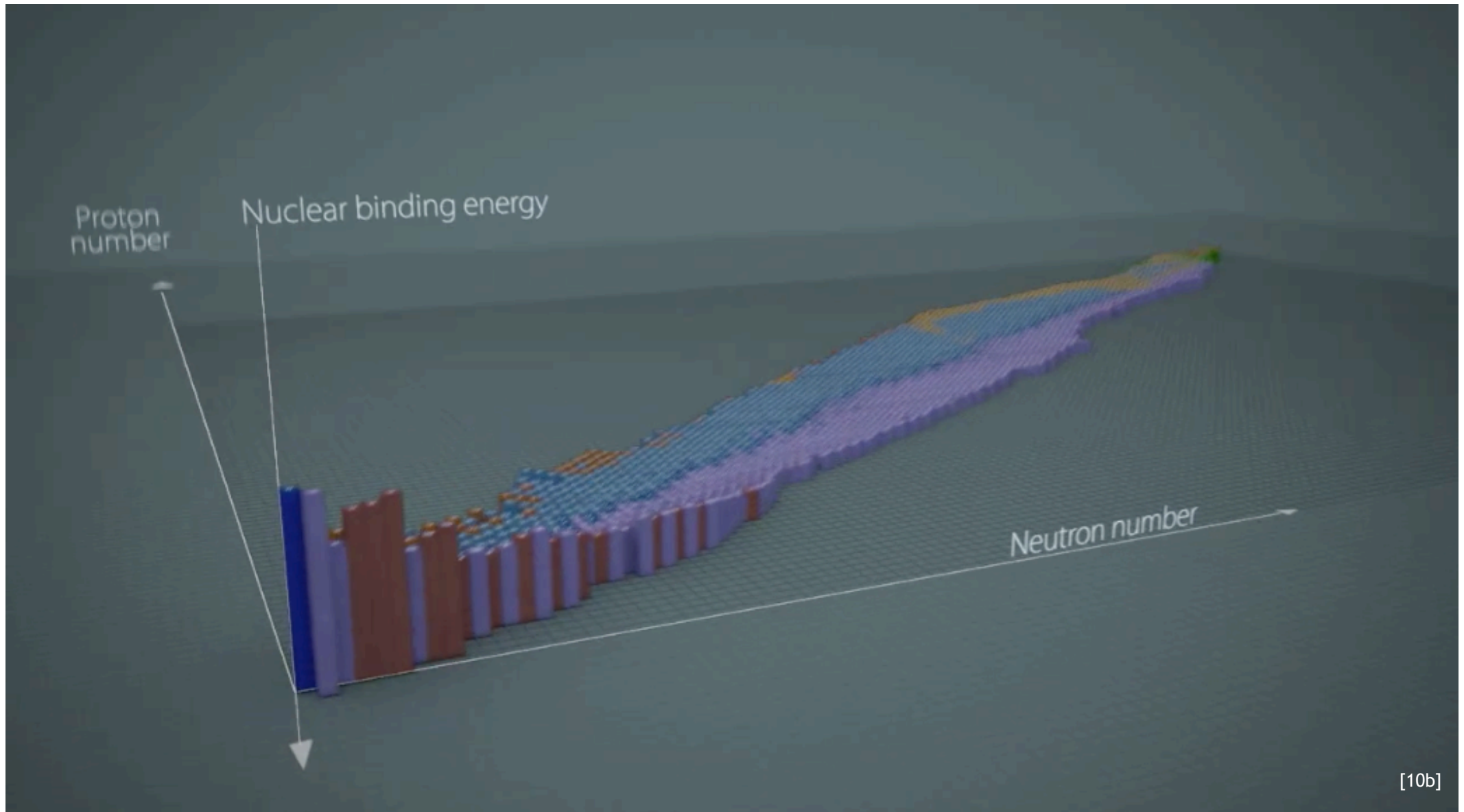
Bindningsenergi per nukleon

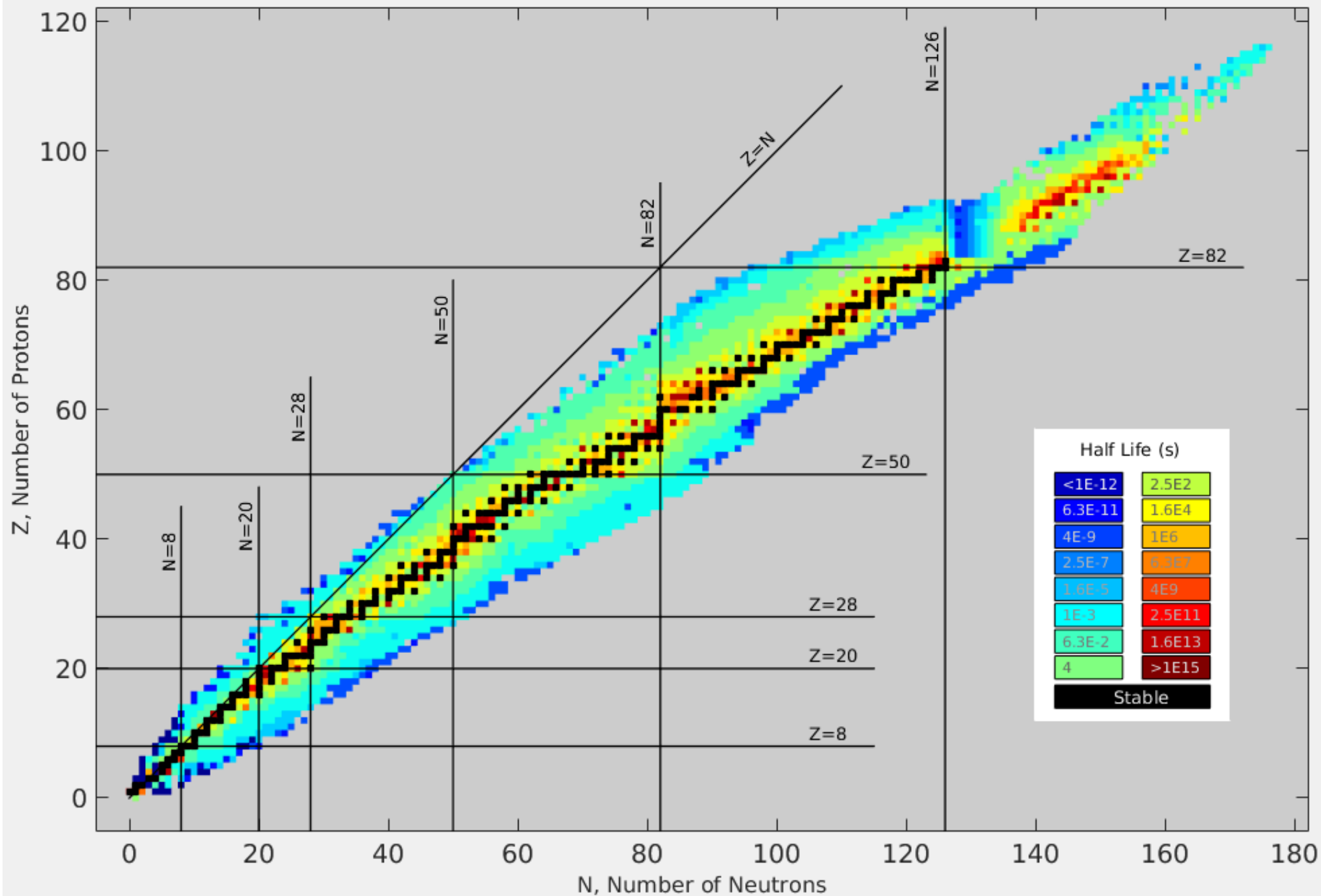


Vänd diagrammet upp och ned:

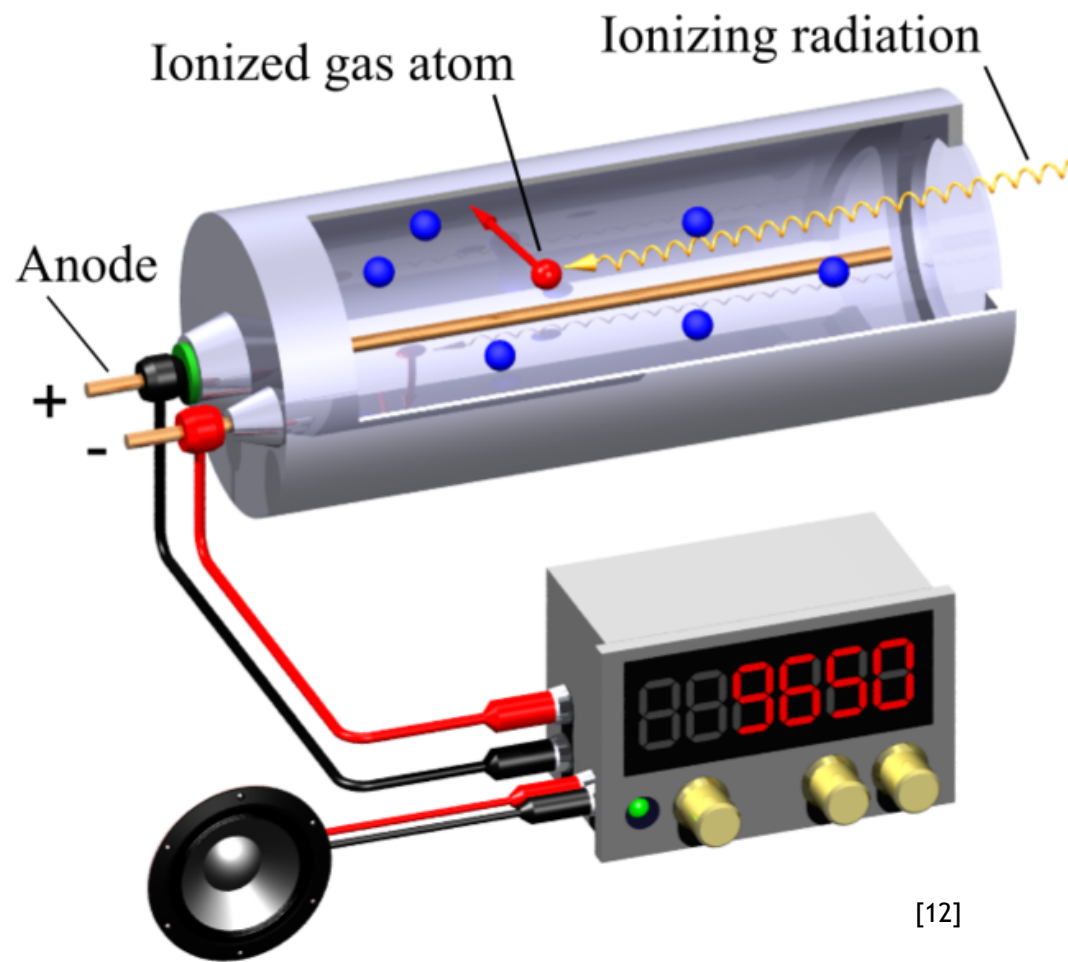








GM-rör



[12]



[13]

GM-rör



Källor

Ej klart!

- [1] https://en.wikipedia.org/wiki/Nuclear_medicine kropp undersökt med PET/CT och FDG-18.
- [2] <https://sv.wikipedia.org/wiki/Positronemissionstomografi> PET/CT-skanner på Karolinska sjukhuset i Huddinge.
- [3] https://en.wikipedia.org/wiki/Crab_Nebula
- [4] Wikipidia
- [5] Wikipidia
- [6] Youtube-film
- [7] Wikipedia
- [8]
- [9] Fysik för gymnasieskolan A av Alphonse med flera (bok)
- [10] Ergo Fysik 1 av Kvist med flera (bok)
- [10b] Youtube-film
- [11] Basic Physics av Ford (bok)
- [12] Wikipedia
- [13] Wikipedia

Ej klart!

Ej klart!

Ej klart!