APPENDIX

More about numbers
with more or less wild elaborations

Mass number maxima:
  238
  206-209

Z-N maxima:
  82-83
  92
  126
  146

Sums of Z in the periodic system

Sums of mass numbers in the periodic system

What decides the maximum mass of atoms in Nature? The common answer is of course the reach of the strong nuclear force, but why just this reach, to 209 or 238 u?

Another aspect could be the possibility for the nuclei to “breath empty space”, their dependence on this “negative energy” of Space as nourishment to uphold their existence as units. (Cf. interpretation of light waves in part Physics.)

A third assumption, behind these papers, is that numbers count. At bottom founded in the numbers of dimensions. The numbers 238 - or 209 for instance don’t seem to be any numbers whatsoever.

If some or any of the derivations of numbers in these operations should have physical sense, revealing some unknown underlying “laws”, the total disregard of 10-powers and displacements in the decimal system in many of them need of course some suggested explanation.

Here only two remarks. Number 10 is the sum of poles from the 5th degree in dimension degree (d-degree) 4 in our model, and displacements could eventually be regarded as referring to different levels of developing dimension chains.

One association is the repetition of the same patterns in decreasing sizes within the field of chaos research.

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12. 238 - more about the mass number of Uranium:

a. The Golden Section:

The division of U 238 in N- and Z-numbers follows roughly the golden section:

The golden section (gs): \[ \sqrt{\frac{5}{4}} + \frac{1}{2} = 1.618... \]

\[ \frac{238}{gs} \approx 147.1, \approx N + 1 \]
\[ \rightarrow 147.1 / gs = 90.9, \approx Z -1. \text{ Sum 238.} \]

(Compare 238 x gs \( \approx \) 385, a number among amino acids, see files about the genetic code: 385 x 2.)

b. Number reading in the superposed odd-figure chain:

Fig. 12-1:

\[ \begin{align*}
7,5^2 + 13,5^2 &= 238.5 \\
\approx 56,25 &\approx 182,25
\end{align*} \]

Fig. 12-2:

The number division divides the series 1 --238 at the border between fusion and fission, at energy minimum. Fe, 56 A, max. stability.

Sum of numbers 75 + 135 = 210. (210 inverted = \(2 \times 238.095 \times 10^{-5}\).)

[Compare numbers 74 and 135 as inversions, 74 \& 135..., sum 209 and these numbers in the genetic code: 135 = nucleic acid A, and 74 the mass number of B-chains of amino acids, transported by base A. Also: 75 \& 133..., (3/4 - 4/3, \(\times 10^x\)), mass numbers of amino acids Gly and Asp, elementary building stones for bases purines and pyrimidines of the genetic code.]

c. Elementary particles \(\pi^+\) and \(\mu\) in a relation of multiplication:

\[ \sqrt{\frac{273 \times 207}{\pi^+ \mu}} = \sqrt{\frac{\pi^+}{e}} \times \frac{\mu}{e} = 237.72, \approx 238. \]

The “2-figure chain”, wavy reading:
\[
\begin{array}{cccc}
9 & 7 & 5 & 3 \\
\end{array}
\]
\[
\begin{array}{cccc}
/ & / & / & / \\
5 & 4 & 3 & 2 & 1 & 0
\end{array}
\]

59+94+47+73 = 273

47+73+35+52 = 207
d. $4^{th}$ root out of $2^5 = 238 \times 10^{-2}$ (237,84).

e. $\lg 237,58 = 2,3758$ ... Difference to 2,38 $\approx 1/238$.

$10 \lg 240 = 238 \times 10^{-2}$ (238,02 x 10$^{-2}$).

f. The $\pi$-number $3,14...$

$4/3 \pi, \wedge = 238,73 \times 10^{-3}$

$= \text{inversion of a volume with radius } r = 0,1.$

[C f. $3/4 \pi = 235,6 \times 10^{-2}$ (U 235).]

g. Triplet numbers inwards: $012 + 123 + 234 + 345 = 714$

$238 = 1/3 \text{ of } 714.$

h. Roots of some dimension numbers:

\[
\begin{array}{cccccc}
5 & 4 & 3 & 2 & 1 & 54321 \\
8 & 6 & 4 & 2 & 2468 & 56789 \\
\end{array}
\]

$\sqrt{56789} = 238,3 \sim A$

$\sqrt{8642} = 92,96 \sim Z (+1)$

i. Magic squares:

Figures 1-9 arranged to give the sum of 15 in each direction, horizontally, vertically and diagonally, (15 = the sum of a 5-4-3-2-1-chain):

Fig. 12-3:

Note the division of 92 $Z$ in odd 2-figure numbers 35 + 57, circa a partition 2/3:

compare the division of Uranium into Sr (38 $Z$) and Ba 56 $Z$.

Note too the orthogonal relation between N and $Z$ and the eventual physical sense ! ?
j. The quotient between triplet numbers in the dimension chain squared in relation to $2\pi$:

$$\frac{210}{543} = 38,674. \Rightarrow x^2, \quad \div 2\pi = 238,045 \times 10^{-4}$$

k. The natural logarithm and number 5-4-3:

$$\ln (2 \times 5,43), x 10^2 = 238,5.$$ 

l. “A-Z”-numbers from a multiplication of steps 5-4-3 times poles of d-degree 3 read as 44:

*Fig. 12-4:*

\[
\begin{array}{c}
4a \\
3a \\
3b \\
1b \\
2b \\
5b \\
A \\
Z \\
Uranium
\end{array}
\]

$$543 \times 44 = 238,92$$

m. Polarizations of number 10 (as sum of poles in d-degree 4):

*Fig. 12-5:*

m1) \[
\begin{array}{c}
238 \\
119 \\
2 \times 19 \\
56 \\
\frac{35}{2} \\
\frac{3}{2} \\
Sr \\
\frac{56}{2} \\
Ba
\end{array}
\]

\[73 + 64 = 137, \text{ A-number Ba.}\]

\[91 = \text{A-number of one unstable isotope Sr.}\]

m2). Number 10 polarized (with intervals 8 - 6 - 4 - 2 - 0):

*Fig. 12-6:*

\[e^{5.4729} = 238.15. \quad 1836.5 \approx \text{quotient p/e}.\]
n. Number readings in the loop version of the dimension model:

Fig. 12-7, 8:

![Diagram](attachment:image.png)

Cf. 182-56, fig. 12-1.

o. Dimension degrees and sum of poles:

Fig. 12-9:

<table>
<thead>
<tr>
<th>Example</th>
<th>4a</th>
<th>3a</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4b</td>
<td>3b</td>
<td></td>
</tr>
</tbody>
</table>

Number reading: \( \frac{1}{(\frac{1}{38} + \frac{1}{26})} = 238.3 \approx A\)-number of U

Cf. \( \frac{1}{(1/26 - 1/38)} = 82.3 \approx Z\)-number of Pb.

p. The “2-figure-chain” again: number readings downwards,

e.g. \(95 + 94 = 189, 31 + 11 = 42\) etc.

Fig. 12-10:

\(42, \wedge = \text{period } 238095238 \ldots\)

With factor 21 in all the numbers, their inversions give the same period times the number series for steps in the chain: \(4.5 - 4 - 3.5 - 3 - 2.5 - 2 - 1.5 - 1 - 0.5\).

Ex. \(147, \wedge, x 3.5 = 238.095238 \ldots x 10^{-4}\).

q. Inversions of “step numbers” read in the \(2^x\)-chain (\(x = 5 - 0\)):

One hypothesis in the model is that the \(2^x\)-series may be regarded as operating inwards in the dimension chain, i.e. elementary division through the polarizing forces:

Fig. 12-11:

\(32 \leftarrow 16 \leftarrow 8 \leftarrow 4 \leftarrow 2 \leftarrow 1: \) = Series \(2^x\)

<table>
<thead>
<tr>
<th>42 \wedge</th>
<th>48</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>238 x 10^{-4}</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>48 \wedge</th>
<th>48,48 ... \wedge = 206 x 10^{-4}</th>
</tr>
</thead>
<tbody>
<tr>
<td>208 x 10^{-4}</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12 \wedge</th>
<th>32,3 x 10^{-3}</th>
</tr>
</thead>
<tbody>
<tr>
<td>41,7 x 10^{-3}</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>48 \wedge</th>
<th>145,8 \approx 146</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,8 x 10^{-3}</td>
<td>N-number ^{238}U</td>
</tr>
</tbody>
</table>
13. 209 (208-206) as mass maximum of “stable” isotopes:

a. The quotient in strength between the nuclear force and the electromagnetic force is said to be about 137 (Gamow):

\[
\frac{3.2}{2.1} \approx \text{quotient } N/Z \text{ at } Z\text{-number } 82\sim 83 \text{ Z. (Pb 82, Bi 83 Z)}
\]

\[
3.2/2.1 \times 137 = N + Z = 208.72 \approx 209. (Bi)
\]

b. The \(2x^2\)-chain, inversion of numbers::

\[
\begin{array}{cccc}
50 & 32 & 18 & 8 \\
82 & \wedge & 28 & \wedge \\
& & & \\
\end{array}
\]

These two numbers inverted and added, the sum re-inverted, x 10, gives the number \(\approx 209\).

\[
\Sigma = 4,7909... \times 10^{-2}
\]

\[
208.72 \times 10^{-1}
\]

c. \(\ln 8, \times 10^2 = 208. (207.94)\)

\(8 = 2 \times 2^2\) at d-degree 2 in the \(2x^2\)-chain.

d. 209 as number out of the middle of the dimension chain:

\(\frac{1}{2} \times 5, \text{ in step 3} ---- 2: 2.5 \text{ divided with the d-degree numbers:}\)

\(\text{Fig. 13-1:}\)

\[
\begin{array}{c}
\text{2,5} \\
\times 10^2
\end{array}
\]

\(\begin{array}{c}
83,5. \\
125
\end{array}\)

Z-N-numbers of 208 A, Pb,
(also one unstable isotope of Bi)

\(83 -1, 125 + 1: \text{ Pb 208} \text{ Displacement of 1 unit.}\)

e. Dimension degrees and their pole sums:

\(\text{Fig. 13-2, 3:}\)

\[
\begin{array}{cccccc}
3 & 2 & 1 & 0/00 \\
38 & 26 & 14 & 02
\end{array}
\]

\[
\begin{array}{c}
\text{Turned numbers:}\n\end{array}
\]

\[
\begin{array}{c}
\text{N- + Z-numbers for Pb 206}\n\end{array}
\]

(145 and 61 = A- and Z-numbers for Pm which lacks a stable isotope.)
f. 2-figure-readings in the elementary chain with superposed odd-figure chain:
Fig. 13-4.

```
<table>
<thead>
<tr>
<th>9</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
```

“inwards”: \(25 + 32 + 13 + 11 + 01 = 82\) \(> 209\)

“outwards”: \(52 + 23 + 31 + 11 + 10 = 127\) \(\rightarrow N + 1\)

g. Triplets of the dimension chain with exponent 2/3:
(Cf. the “exponent series” 5-4-3-2-1 with the same exponent in pdf-files about The genetic code.)

- \(543^{2/3} = 66,558.\) \(> 123,70. \approx 124 124 N\)
- \(432^{2/3} = 57,146.\) \(> 206 \text{ Pb}\)
- \(321^{2/3} = 46,882.\) \(> 82,21. \approx 82 82 Z\)
- \(210^{2/3} = 35,330.\)

h. \(2^x\)-chain as 4 “triplets” (\(\approx\) as the period of 5/7: 0, 7-14-28-57...):

\[
\begin{align*}
2^5 + 2^4 + 2^3 &= 56 <------- \\
2^4 + 2^3 + 2^2 &= 28 \\
2^3 + 2^2 + 2^1 &= 14 - 42 - 63 \\
2^2 + 2^1 + 2^0 &= 7 <------- \\
\end{align*}
\]

\(2 \times 42 = 84, Z + 1\)
\(2 \times 63 = 126, N - 210\)

i. Dimension chain as quotient steps:

\(5 \div 4 \div 3 \div 2 \div 1, \ x \ 10^3 = \underline{208,33}.\)

j. Most elementary interpretation of \(209 = 210, -1\),
the triplet 210 in the dimension chain: “poles” \(209 \text{ (Bi) } \Downarrow 1 \text{ (H)}\).

Dimension chain: \(5 \ 4 \ 3 - 2 \ 1 \ 0\)
(Elements assumed developed in step 2--1.)

Note: \(21 \times 12, x 1/2 = 126 = N\)-number at A 209-210
\(N = 3/5 \text{ of } 210 = 126\)
\(Z \approx 2/5 = 84. \quad (-1 = 83)\)
k. Cumulative sums in different number series:

k1 In the \(2x^2\)-chain in one step:

Fig. 13-5:

\[
\begin{array}{cccccc}
50 & -32 & 18 & -8 & -2 & 0 \\
60 & & 28 & & & 110 \\
& & 208 & & & \\
& & 210 & & & \\
\end{array}
\]

k2 Cumulative summations in the elementary chain 5-4-3-2-1-0:

Fig. 13-6:

Compare 209, divided 126, N-number, + 83, Z-number.

k3 The elementary number chain: Cumulative additions in another way:

\[
\begin{array}{cccccc}
0 & -1 & -2 & -3 & -4 & -5 \\
& & 1 & 3 & 6 & 10 & 15 \\
& & 1 & 4 & 10 & 20 & 35 \\
& & 1 & 5 & 15 & 35 & 70 \\
& & 1 & 6 & 21 & 56 & 126 \\
\Sigma & 1 & 83 & 126 \\
\end{array}
\]

Z N Bi

k4 The \(2^x\)-series with cumulative additions:

\[
\begin{array}{cccccc}
1 & -2 & -4 & -8 & -16 & -32 \\
& & 3 & 7 & 15 & 31 & 63 \\
& & 10 & 25 & 56 & 119 \\
& & 35 & 91 & 210 \\
& & 126 \approx N \approx 84 \\
\end{array}
\]

l. 209 +/- 1, as stimulated by addition of units to Uranium 238:

\[
238 + \text{one alpha} = 242, \land x \frac{1}{2} \times 10^5 = 206.6, \text{Pb 206.} \\
238 \land x \frac{1}{2}, \times 10^5 = 210. (210,08) \\
239 \land x \frac{1}{2}, \times 10^5 = 209. (209,20) | -83-84 Z \\
240 \land x \frac{1}{2}, \times 10^5 = 208. (208,33) | -82 Z
\]
m. 208 as sums of rows in the number pyramid on orbitals:

\[ \begin{array}{cccc}
  14 & 24 & 10 & 6 \\
  8 & 6 & 2 &
\end{array} \]

Fig. 13-7:  
\[ \begin{array}{cccc}
  c & d & p & s \\
  32 & 80 & +2 & \underline{82} = Z \\
  48 & \underline{64} & \underline{> 208} \\
  64 & \underline{-128} & \underline{-2} = \underline{126} = N \\
\end{array} \]

n. \( 10 \log 1-2-3 = \underline{209} \ (208.99) \times 10^{-2} \)

(N = 126: \( \log_{10} 126 \approx 2.10 \times 10^{-2} \))

o. Log-number of the Golden Section:

\[ 10 \log [ \sqrt{\frac{5}{4}} + \frac{1}{2} ] \times 10^3 = 209. \ (208.9876) \]

p. Square root out of 10 with exponent \( 10^{2/3} \):

\[ \sqrt[3]{10^{2/3}} = \underline{209}. \ (209.312) \]

q. Exponent \( 2/3 \):

\[ 3^{2/3} \times 10^2 = 208. \]

Numbers 208-209 appearing in the distribution of codons in the genetic code. (208 read in number-base system 8 = 210.)
14. Z-maxima, numbers around 82-83:

Earlier derivations of the numbers, see 209: d, h, f, k(k2, k3), l, and 209: e, f, g, j.

a. Number readings in the 2x^2-series:

Sum of first two numbers in the chain = 82:

\[
\begin{array}{cccccc}
50 & - & 32 & - & 18 & - 8 & - & 2 & - & 0 \\
\hline
50 & - & 32 & - & 18 & - 8 & - & 2 & - & 0 \\
\hline
28 & 10 & & & & & & & & \\
\hline
82 & + & 10 & = & 92 \ Z
\end{array}
\]

82, 28 are among the so called "magic numbers" in the periodic system.

\[
\begin{array}{cccccc}
50 & - & 32 & - & 18 & - 8 & - & 2 & - & 0 \\
\hline
50 & - & 32 & - & 18 & - 8 & - 2 & - & 0 \\
\hline
2 & 2 \\
\hline
84
\end{array}
\]

84 x 5/2 = 210, element 84 Z.
84 x 3/2 = 126 = N-maximum l--83 Z.

b. Summation of orbital numbers as an underlying or superposed level:

Repeating the figure from Part I: 9b about Fe and the energy dale:
Whole sum 82 as a Z-number.

\[56 + 26 = 82\]

Fe 26 Z, mass number 56 A

\[\sqrt{10} \times (18 + 8) = 82.2\]

c. 2x^2-chain with intervals as orbitals:

\[
\begin{array}{cccccc}
50 & -|-- & 32 & -|-- & 18 & -|-- & 8 & -|-- & 2 & -|-- & 0 \\
(18) & 14 & 10 & 8 & 2
\end{array}
\]

Step 3-2: \[18 \longrightarrow 8 \]

\[\sqrt{10} \times (18 + 8) = 82.2\]

d. Step 3-2 read as number 3,2:

\[3,2 \times (18 + 8) = 83,2\]
e. $83 \, Z \approx$ the inversion of d-degree step 1—2:

(Elements supposed to be developed in the step 2-1 of a level chain.)

Fig. 14-2:

\[
\begin{array}{ccccccc}
5 & 4 & 3 & 2 & 1 & 0 \\
\downarrow & & & & & \\
43 & 123 & \downarrow & & \\
166 & \rightarrow x 1/2 = 83 \\
\end{array}
\]

\[\frac{1}{21} + \frac{1}{12} = \frac{1}{7636} \approx \text{mean value for bond energy per nucleon in the atomic nucleus - in MeV!}\]

f. Dimension step numbers:

\[
\begin{array}{ccccccc}
5 & 4 & 3 & 2 & 1 & 0 \\
\downarrow & & & & & \\
43 & 123 & \downarrow & & \\
166 & \rightarrow x 1/2 = 83 \\
\end{array}
\]

Sum of $1-83 \, Z = 21 \times 166$. (Elements in f-orbitals $21 \times 43 \, Z$, element in s-p-d-orbitals $21 \times 123$.

\[e^{\frac{543}{123}} = 82.65 \approx 83.\]

h. Reading of 2-figure numbers in the elementary chain with superposed odd-figure chain:

Fig. 14-3:

\[
\begin{array}{ccccccc}
47 & 35 & 73 & 52 \\
\downarrow & & & & & \\
82 & 125 & \rightarrow \text{N} \\
\end{array}
\]

\[\frac{47 + 35}{82} + \frac{73 + 52}{125} = 207 \, \text{A, Pb}\]

Cf. the $\mu$-lepton $\mu/e = 207 = 47 + 73 + 35 + 52$, the middle at d-degree 3.
The $\pi$-meson $\pi/e = 273 = 59 + 94 + 47 + 43$, the middle at d-degree 4.
(Sum $480, \wedge 208,3. \times 10^5$)

i. Squares of step-numbers in superposed number chain:

Fig. 14-4:

\[7,5^2 + 5,3^2 = 56,25 + 28,09 = 84,34 \approx 84.\]

Also a division around the "energy dale".
j. Polarization of number 10 as the sum of poles in d-degree 4:

Fig. 14-5:

Intervals 8-6-4-2 = sum of poles in d-degrees 3-2-1-0.

137, the relation in strength between the nuclear force and the electromagnetic one. (Gamow.)

Z-maximum 92:

k. Inversions (from Part I):

\[
\frac{543}{1/2} \times 10^5 = 92. \quad (92,08) \quad \text{Uranium Z}
\]

\[
\frac{210}{1/2} \times 10^5 = 238. \quad \text{Uranium A}
\]

l. The natural logarithm \(e\) a number in step 3 -- 2, 5 - \(e\) = 2.28...(from Part I):

\[
\frac{210}{5-e} = 92.04. \quad \frac{543}{5-e} = 238
\]

m. Superposed odd-figure-chain:

Fig. 14-6:

\[
35 + 57 = 92 \quad (13 + 79 = 92)
\]

n. From Part I, figure 09-4:

Fig. 14-7:

\[
92 = \frac{46}{46} + \frac{28}{46} = \frac{14}{46} + 4
\]

See also earlier operations: 238: a, h, i, n.
15. N-numbers 126 - 146 as maxima at 83 and 92 Z:

Earlier operations:
see 238: a, i, m, n, q; 209: d, e, f, g, h, j, k (k2, k3, k4), m.

1. The elementary number chain with exponent 2/3:

\[ 5^{2/3} \times 100 \approx 292 = 2 \times 146, \text{ maximal N-number, Uranium}. \]

\[ 4^{2/3} \times 100 \approx 252 = 2 \times 126, \text{ N-number around max. “stable” isotopes 82-83 Z}. \]

(Cf. numbers for amino acids in *The Genetic Code*.)

2. Higher and lower d-degrees
maintains together the potential in the intermediate d-degree according to main postulates in the dimension model.

\[
\begin{array}{c|c|c}
5 & \rightarrow & 4 \leftarrow 3 \\
4 & \rightarrow & 3 \leftarrow 2 \\
3 & \rightarrow & 2 \leftarrow 1 \\
2 & \rightarrow & 1 \leftarrow 0
\end{array}
\]

\[
\begin{array}{c|c|c|c}
5-3 & 4-2 & 3-1 & 2-0 \\
\hline
\end{array}
\]

- 126

- 146

3. Sum of the 2\(^x\)-chain x 2 from d-degree 0/(00) inwards:

\[
\text{Sum } [ 2^0 \ldots 2^5 ] = 63, x 2 = 126
\]

4. 9 times number steps in the loop model of 5 polarized 4 / 1 and 3 / 2:

\[
\begin{array}{c|c|c}
9 \times 14 & \rightarrow & 126 \\
81 \rightarrow & 125 & - \text{ Pb} \ 207 \ A \\
9 \times 23 & \rightarrow & 207
\end{array}
\]

\[
\begin{array}{c|c|c}
9 \times 14 & = & 126 \\
81 \rightarrow & 125 & - \text{ Pb} \ 207 \ A \\
9 \times 23 & = & 207
\end{array}
\]
16. 3486 - the sum of Z-numbers 1-83 Z:

a. The Z-sum divided on elements in the different orbitals:

Fig. 16-1:

\[ \sum_{s} 21 \times 43 = 903 \]
\[ \sum_{p} 21 \times 123 = 2583 \]
\[ \sum_{d} 3486 = 5 - 4 - 3 - 2 - 1 - 0 \]

Hence, the sums are proportional to d-degree steps read as numbers, if \( s + p + d \) are added.

\[ 21 \times 43 = 903 \]
\[ 21 \times 123 = 2583 \]
\[ 3486 \]

b. Z-sum 3486, distribution on whole shells and orbitals:

<table>
<thead>
<tr>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>s</td>
<td>3</td>
<td>7</td>
<td>23</td>
<td>39</td>
<td>75</td>
</tr>
<tr>
<td>p</td>
<td>45</td>
<td>93</td>
<td>201</td>
<td>309</td>
<td>246</td>
</tr>
<tr>
<td>d</td>
<td>255</td>
<td>435</td>
<td>741</td>
<td>894</td>
<td>1431</td>
</tr>
<tr>
<td>f</td>
<td>3</td>
<td>52</td>
<td>371</td>
<td>1578</td>
<td>1125</td>
</tr>
</tbody>
</table>

\[ \Sigma 258 \]
\[ 1161 \]

Number of orbitals = 15, the sum of an elementary dimension chain 5+4+3+2+1; (the 15th only half).

\[ \approx \frac{1}{3} --- \frac{2}{3} \]

Factor 43 \( \times 10^5 = 2325.6 \). \( d + p \) elements

\[ \frac{2}{3} = 2324 \approx d + p \approx 54 \times 43, (+3) \]
\[ 3486 \approx \frac{1}{3} = 1162 \approx f + s \approx 54 \times 43 \times 1/2 \]
d. \[54,3 \times 32,1 \times 2 = 3486,06.\]

e. \[3486 \times 4 \approx 4/7 \times \text{sum 1-110 } Z(6105),\]

\[4/7 \times 6105 = 3488.6\]

f. s-orbital, Z-sum of elements = 258:

\[258 \approx 1/10 \text{ of } s + p + d \text{ 2583}\]

g. The quotient \[543 / 210 = 258,57 \times 10^{-2}.\]

The sum of the s-orbital elements = 258.

The quotient A/Z for U: 238/92 = 258,7.

Inversion: 258,57 \approx 386,7 \times 10^x \approx 387.

\[387 = 9 \times 43\]

\[258 = 6 \times 43\] 

\[\approx 387.\]

\[387 = 9 \times 43\]

\[258 = 6 \times 43\] 

\[\approx 387.\]

\[9 \times 387 = 3483 = \text{the whole sum minus 3.}\]

\[6 \times 387 = 9 \times 258 = 2322, \times 1/2 = 1161 = s + f \text{ orbital elements.}\]

(Cf. in biochemistry Z-relations NADPH+H and ATP: NAP(H) 386 (+1) — ATP 258: inverse numbers.)

h. Division of the total sum in the middle step 3 — 2:

here between periods d-6, (i. g. Fe 26 Z) and d7

\[\text{Fig. 16-3:}\]

Z:

\[\begin{array}{cccccc}
\bar{4} & \bar{f} & \bar{5} & \bar{d}_{6} & \bar{2} & \bar{p} \\
903 & 849 & 582 & 894 & 258 \\
1752 & 1734 & & & \\
18 & \\
\end{array}\]

Numbers 1 + 3 + 5 = 903 + 582 + 258 = 1743 = 3 x 581.

Numbers 2 + 4 = 849 + 894 = 1743

i. Z-sums as squares (cf. mass sums below):

\[s + p + d = 50^2, + \text{element } 83 Z, \quad f = 30^2 + 3.\]
j. Number 1-4-9:

Whole shells K-L-M-N-O = \(3129 = 21 \times 149\) \(\text{Rest } 21 \times (4^2 + 1^2) = 357\).

p-orbital in 2-1-step = \(894 = 6 \times 149\).

\(2x^2\)-chain polarized as an elementary chain:

Fig. 16-4:

1-4-9 as poles in d-degrees

0/00, 1, 2

A note:. Mirrored d-orbital and number 149:

\[
\begin{array}{ccccccc}
\text{f} & \text{d} & \text{p} & \text{s} \\
903 & 1431 & 894 & 258 \\
1341 & 894 & & \\
447 \times 3 & 2 \times 447 & \\
149 \times 9 & 6 \times 149 & \\
\end{array}
\]

k. Test with dividing number of elements 1-83 Z in accordance with the \(2x^2\)-chain, without the f-orbital:

Fig. 16-5:

Middle step \(351 = \frac{27 \times 13}{3}\)

Outer steps \(2232 = \frac{72 \times 51}{3}\)
Two other Z-sums 3300, -1, 3570:

1. Sum 3300, -1 = 1 - 82 Z without elements Tc 43 and Pm 61  
   (not found as stable isotopes in Nature) = 80 elements:

   82 Z: end station for the disintegration series of U 238, U 235 and Th 232.
   
   \[ 2200, -1 = p + d\text{-orbitals} \sim 2/3 \]
   
   \[ 3300, -1: < \]
   
   \[ 1100 = s + f\text{-orbitals} \sim 1/3 \]

   "Quark" partition: \( 2/3 - 1/3 \) as of the sum 3486 above.
   Partition of number of elements: \( \rightarrow 55/25 \).

   **Distribution of the Z-sum on shells and orbitals without Tc, Pm, with and without Bi 83 Z:**

<table>
<thead>
<tr>
<th></th>
<th>s</th>
<th>p</th>
<th>d</th>
<th>f</th>
<th>- Tc 43</th>
<th>- Pm 61</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>55</td>
</tr>
<tr>
<td>L</td>
<td>7</td>
<td>45</td>
<td></td>
<td></td>
<td>52</td>
<td>55²</td>
</tr>
<tr>
<td>M</td>
<td>23</td>
<td>93</td>
<td>255</td>
<td></td>
<td>371</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>39</td>
<td>201</td>
<td>392</td>
<td>842</td>
<td>1474</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>75</td>
<td>309</td>
<td>741</td>
<td></td>
<td>1125</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>111</td>
<td>246 (163)</td>
<td></td>
<td></td>
<td>357</td>
<td>357 (274)</td>
</tr>
<tr>
<td>Sum</td>
<td>258</td>
<td>894 (811)</td>
<td>1388</td>
<td>842</td>
<td>3382</td>
<td>(3300 -1)</td>
</tr>
</tbody>
</table>

Without Tc 43 Z and Pm 61 Z = 3486 - 104 Z.
Numbers within brackets = without Bi 83 Z.

- 5 shells = \( 55² \), the square of K- plus L-shells.

- With Bi 83 Z excluded the sum of 80 elements becomes 3300 -1:
  With number 83 “wrongly” deduced from the sum of first 5 shells one gets the division of 3300 -1:

  P-shell + f-orbital: \( 1200, -1 \)  
  K+L+M+N+O-shells, s + p + d-orbitals: \( 2100 \)  

  Quotient 4/7

(P-shell 357, Bi 83 Z included, + f1-orbital 842 = 1200 -1.  
K+L+M+N+O-shells = 3025, - f₁ = 2183, - Bi 83 Z in a p-orbital = 2100.)

(P- and Q-shells are in Part I interpreted as translations of the not realized highest orbital \( x = 18 \) or the equivalence.)
m. Sum Z \(3570 = 1-84 Z\):

\[3570 = \text{sum of triplets in inward direction in the dimension chain} = 012 + 345 \times 10.\]

\[3570 = 1-84 Z: \quad 2x^2\text{-kedjan:} \quad 28 \quad \frac{50 - 32}{82} - \frac{18 - 8 - 2}{2} - 0 \quad \frac{84}{84}\]

- \(3570 = 0-1-2 + 3-4-5, \quad x\ 10: < 1-2 \times 10 = \text{sum of inert gases} \quad \frac{28}{3-4-5 \times 10} = \text{the other elements}\]

- \(3570\) is the inversion of number 28:
  \(3570, \wedge = 28. \times 10^{-5} (28,3571,4.) \quad (28 \times 3 = 84)\)

Group 0, the inert gases = Z: 2, 10, 18, 36, 54 = \(\Sigma 5! = 120.\)

Rest: \(\frac{3450}{1350} \left\langle \begin{array}{c} 903 \downarrow \frac{447}{\downarrow \text{f-orb.}} \downarrow \text{group} \downarrow \text{Fe-Co-Ni} \downarrow \text{etc.} \end{array} \right\rangle 2100 \quad \frac{345}{210} \quad \frac{5 - 4 - 3}{2 - 1 - 0} \quad \frac{1-7 \ a, \ b}{\text{diff.} 135} \quad \frac{3450}{2100}\]

(P-shell elements in s + p-orbitals in the sum 1-83 Z = \(357. = 012 + 345.\))

A note: Number of 92 elements without Tc and Pm, divided on the orbitals = 30 - 30 - 30:

\[\begin{array}{cccc}
\text{92 elements:} & s & + & f & d & p \\
\text{s} & 14 \\
f_1 & 14 \\
f_2 & 3 & 31 & 31 & 30 \\
\text{- Pm} & 30 & \text{- Tc} & 30 & 30 \\
\end{array}\]

Cf. Sum of poles in the dimension chain = \(30 = 10 + 8 + 6 + 4 + 2.\)
17. **Mass numbers (A) for the element series:**

Values caught from a Table on Physics: mean value of isotopes with regard to their occurrence in nature. Numbers abbreviated.

### a.

<table>
<thead>
<tr>
<th>Elements</th>
<th>A-numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 Z:</td>
<td>113</td>
</tr>
<tr>
<td>11 - 20 Z:</td>
<td>320</td>
</tr>
<tr>
<td>21 - 30 Z:</td>
<td>553</td>
</tr>
<tr>
<td>31 - 40 Z:</td>
<td>813 $\pm$ 1800,-1</td>
</tr>
<tr>
<td>3486 4805</td>
<td>$\bar{=} Z \sim N$</td>
</tr>
<tr>
<td>41 - 50 Z:</td>
<td>1050</td>
</tr>
<tr>
<td>51 - 60 Z:</td>
<td>1342 $\pm$ 2392</td>
</tr>
<tr>
<td>61 - 70 Z:</td>
<td>1600 $\pm$ 1600</td>
</tr>
<tr>
<td>71 - 80 Z:</td>
<td>1880 $\pm$ 2500</td>
</tr>
<tr>
<td>81 - 83 Z:</td>
<td>620</td>
</tr>
<tr>
<td>- 84 Z:</td>
<td>209</td>
</tr>
<tr>
<td>85 - 86 Z:</td>
<td>432 $\pm$ 2018</td>
</tr>
<tr>
<td>87 - 92 Z:</td>
<td>1377</td>
</tr>
</tbody>
</table>

\[ 8291 \]

#### a1).
Mean value per element 1-83 Z $\approx 100$. \( (8291 / 83) \)
In the \(2x^2\)-chain corresponding to d-degrees \( 5 + 4 + 3 = 50 + 32 + 18 \).
1-92 Z: mean value \( 10309 / 92 \approx 112 \).

#### a2)
Divisions as of N-Z of sum 8291:

"Surrounding" groups, 3 first and last 2, = 1-30 Z, +70-83 Z:
43 elements = \( 3486 A \), equivalent with total Z-sum 1-83 Z.
"Inner" groups = 30-70 Z:
40 elements, = \( 4805 A \), equivalent with the total N-sum.

#### a3).
Square numbers in the distribution of mass as connected with steps 5 - 4 - 3:

<table>
<thead>
<tr>
<th>Number of elements</th>
<th>A-sums</th>
</tr>
</thead>
<tbody>
<tr>
<td>50^2</td>
<td>83-71 Z, 13</td>
</tr>
<tr>
<td>40^2</td>
<td>70-61 Z, 10</td>
</tr>
<tr>
<td>40 x 30, x 2, -8</td>
<td>61-40 Z, 20</td>
</tr>
<tr>
<td>30^2, x 2, -1</td>
<td>40-1 Z, 40</td>
</tr>
</tbody>
</table>

### b. Division of Z- and A-sums of 1-83 Z in quotients:

(Repeated from part I.)

5 - 4 - 3 - 2 - 1 - 0: Middle step numbers 3 — 2.
Reading the step number in opposite directions as 32 — 23:
b1) A-number sum 1-83 Z as calculated to 8291 A:

\[
\frac{32}{55} = 0.5818 \approx 0.58 \rightarrow -19 \quad = 4805 = \text{N-sum}
\]

\[
\frac{23}{55} = 0.4182 \approx 0.42 \rightarrow +19 \quad = 3486 = \text{Z-sum}
\]

\[
19 = 3^3 \leftrightarrow 2^3
\]

b2) A-number sum 1-85 Z: 8500:

\[
\frac{32}{55} = 0.5818 \approx 0.58 \rightarrow -15 \quad = 4930 = \text{N-sum}
\]

\[
\frac{23}{55} = 0.4182 \approx 0.42 \rightarrow +15 \quad = 3570 = \text{Z-sum}
\]

b3) 3/2-division of the A-sum 8291 A:

\[
\frac{3}{5} = 0.6 \rightarrow -11 = 4964 = \text{A-sum for 57 - 83 Z}
\]

\[
\frac{2}{5} = 0.4 \rightarrow +11 = 3327 = \text{A-sum for 1 - 56 Z.}
\]

3/2-division marks a border at Ba/La, 56 / 57 Z, after 5 shells, middle number in the 2x^2-chain.

c. Mass distribution on orbitals of sum 8291:

\[
\begin{array}{cccccc}
 5 & 4 & 3 & 2 & 1 & 0 \\
  \text{f} &  \text{d} &  \text{p} &  \text{s} \\
 2200 &  \leq & 6091
\end{array}
\]

\[
50 \times 43 \quad +50 \quad 123 \times 50 \quad -59 \quad \text{Difference from A-sum} = 9.
\]

Cf. Z-numbers: f\(_1\) = 21 \times 43 \rightarrow \leq 123 \times 21 = s + p + d

d. Mass as volumes connected with the \(\pi\)-number (?):

\[
4 \times \pi^2 \times \text{triplet 210 of the dimension chain} = 8290.47
\]

e. Mass sum of elements 1 - 92 Z = 10309 A:

\[
\text{Fig.17-1:}
\]

97: first 2-figure number in the superposed chain.

97 \(\wedge\) = 10309.3 \times 10^{-6} \quad \text{(Inverse number of Te's 97 A:)}
f. Mass sum 1- 50 Z = 2849, a special inverse relation A --- Z:

Number 32 in d-degree 4, x 100, divided in numbers related as inversions:

Fig. 17-2:

\[ \frac{2849}{351 \times 10^{-6}} = 351 \times \frac{1}{2849} \times 10^{-6} \]

The rest, elements 51-83 Z, mass sum = 5442. \( 5442 - 2849 = 259 \times 10^2 \)

The elementary chain with exponent \( 2/3 \times 100 \):

\[
\begin{align*}
A^2/3 & \quad 4^2/3 & \quad 3^2/3 & \quad 2^2/3 & \quad 1^2/3 \times 100 \\
292 & \quad 252 & \quad 208 & \quad 159 & \quad 100 \\
& \quad & \quad & \quad & \quad \\
\frac{544}{285} & \quad 5440 & \quad 2850 & \quad 5442 & \quad 2849 = 8291. \\
& \quad \frac{+2}{-1} & \quad \frac{51-83 Z}{1-50 Z} & \quad A\text{-number sums} \\
& \quad 292 + 252 + 208 = 752, & -259 = 493, x 2 = 986 A \approx A\text{-number sum 1-30 Z} \\
& \quad \frac{986}{\pi^2 (3,14)^2} \times 10^2 \\
\end{align*}
\]

g. A-number sums for groups with oxidation values +/- 1, +/- 2, +/- 3 surrounding the 0-group (inert gases):

\[
\begin{array}{cccccccc}
\text{C} & \text{N} & \text{O} & \text{F} & \text{Ne} & \text{Na} & \text{Mg} & \text{Al} & \text{Si} \\
-3 & -2 & -1 & \emptyset & +1 & +2 & +3 \\
\text{P} & \text{S} & \text{Cl} & \text{Ar} & \text{K} & \text{Ca} & \text{Sc} \\
\text{As} & \text{Se} & \text{Br} & \text{Kr} & \text{Rb} & \text{Sr} & \text{Y} \\
\text{Sb} & \text{Te} & \text{I} & \text{Xe} & \text{Cs} & \text{Ba} & \text{La} \\
\hline
242 & 255 & 261 & 279 & 280 & 281 & 289 \\
542 & 541 & 544 & \text{A-number sums around number 543.} \\
\end{array}
\]

Sum including the 0-group \( \approx 3.5 \times 544.6 \times 10^{-6} \)
h. Sum A + Z for elements 1 - 83 Z:

(Such a sum could be interpreted as number of p + n ,+ e.)

\[ A + Z = 8291 + 3496 = 11,777 = 110^2 - 18^2 ( +1 ) \]

Fig. 17-3:

\[
\begin{align*}
A + Z &= 8291 + 34\,356 = 11,777 \\
5 - 4 - 3 - 2 - 1 - 18 - 8 - 2 - 0 : \text{Sum 110, } &\rightarrow 110^2 \\
&\text{= "5th} \text{orbital, the lacking one} 18. \\
- \text{Cf. 110 - 18 = 92, max Z-number in Nature.)} \\
- A / Z - quotient 8291 / 3486 \approx \frac{4\sqrt{32}}{32}. (A-\text{sum then 8291, 15)}
\end{align*}
\]

i. Mass and Charge as properties in this model assumed related as d-degree 3 to 2:

Fig. 17-4:

\[
\begin{align*}
4 &\leftarrow 3 \rightarrow 2 \rightarrow 1 \\
1-83 Z: \\
&8291 \, A \quad Z \, 3486 \\
&\div 3 \quad \div 2 \\
&\div 34 \quad \div 21 \quad (\text{step numbers inwards - outwards}) \\
&\downarrow \quad \downarrow \\
&= 81,3 \quad 83 \\
1-92 Z: \\
&10309 \, A \quad Z \, 4278 \\
&\div 3 \quad \div 2 \\
&\div 34 \quad \div 21 \\
&\downarrow \quad \downarrow \\
&= 101,07 \quad 101,86
\end{align*}
\]

The operations with numbers of d-degrees and counterdirected steps lead to approximately the same results - as if A- and Z-sums were built on numbers 82 and 100 in the 2x2-chain (?).