STRUCTURE OF NEUTRON AND PROTON

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Introduction

The origin of the theory presented in the following pages lies in my interest in studying the binding energy of the principal elements and the resulting loss of mass.

I started from the following point which could indicate that there were "preferential" (quantified) losses of mass in the implementation of binding energy (EB). Indeed:

EB 2He4 = 28.3 MeV

EB $_4Be^8$ = 56.5 MeV i.e. about 28.3 x 2

EB $_6C^{12}$ = 92.1 MeV i.e. about 28.3 x 3.25

EB $_8O^{16}$ = 127.6 MeV i.e. about 28.3 x 4.5

I noted the following: by deducting a mass corresponding to 1 800 electron masses from the neutron mass and from the proton mass, one obtains:

for N: 939.553 MeV – [1 800 x 0.511004] MeV = 939.553 MeV – 919.807 MeV = 19.746 MeV.

for P: 938.259 MeV – [1 800 x 0.511004] MeV = 938.259 MeV – 919.807 MeV = 18.452 MeV.

Since: 19.746 MeV/2 + 18.452 MeV = 9.873 MeV + 18.452 MeV = 28.325 MeV,

i.e. a mass equivalent to the mass implemented for the binding energy of 2He4.

So, I sought to establish a relation between the mass of 1 800 electrons and the mass of the neutron equal to 1 838.6 electrons (see schemas 1 and 2).

There is:

$$(1.01)18 = 1.1961474757$$

and $(1.01)17 = 1.1843044314$

and $$\frac{2 \times 1\,800 + 3[(1.01)18 - 1] \times 100 + [(1.01)17 - 1] \times 100}{2} = 1\,838.63734$$

This relation between the masses of neutron and electron is expressed in the attached schema 1, established under the form of a Pascal triangle.

$$\frac{1}{2}\begin{bmatrix} 1.6147475(7) + 18 + 1\,800 + 18 + 1.6147475(7) \\ 1.6147475(7) + 18 + 1\,800 + 17 + 1.4304431(4) \end{bmatrix}$$

i.e. a neutron mass equal to 1 800 + 35.5 + 3.13734 … electron masses.

Through this expression, it is possible to induce a simple mathematical relation between the masses of neutron and of proton by introducing a mass of 1.913 electrons.

See the following expression:
1 800 + 35.5 + (3.13734 – 1.913) /2 = 1 836.11216 electron masses, which is a possible expression of the proton mass.

Structure of neutron mass and magnetic moment [see schema 1(1) and 2(1)].

Example: progressive constitution of line 18 of schema 1(1).

100	0				
	+1				instant 1, mass = +1
	-1				
	+1	+1			instant 2, resulting mass = +1 +1
	-1	-1			
	+1	+2	+1		instant 3, resulting mass = +1 +2 +1
	-1	-2	-1		
	+1	+3	+3	+1	instant 4, resulting mass = +1 +3 +3 +1
etc until					
	-1	-16	-120	-560	
	+1	+17	+136	+680 etc	instant 18, resulting mass = +1 +17 +136 +680 etc

In fact, the annihilation by antimass, as suggested by the previous example, has always taken place at the instant following the creation of mass. Mass and antimass would therefore be equivalent, but the action of mass would take place one instant before the one of antimass, which would impart it a primacy over the latter. The mass which one "observes" would be the resultant of the action of primitive mass, with a deduction of the primitive antimass being made.

As regards electro-magnetism, let us make the hypothesis that, starting from the column corresponding to 10-2 of schema 1(1), each creation of mass is accompanied by a negative electromagnetism and that each annihilation of mass is accompanied by a positive electromagnetism. Let us look at the result in the frame of the preceding example:

100	0				instant 1, e – m	=	0		
	+1								
	-1				instant 2, e – m	=	0	1^-	
	+1	$+1^-$							
	-1	-1^+			instant 3, e – m resulting	=	0	1^-	1^-
	+1	$+2^-$	$+1^-$						
	-1	-2^+	-1^+		instant 4, e – m resulting	=	0	1^-	2^- 1^-
	+1	$+3^-$	$+3^-$	$+1^-$					
etc until									
	-1	-16^+	-120^+	-560^+	instant 18, e – m resulting	=	0	1^-	16^- 120^- etc
	+1	$+17^-$	$+136^-$	$+680^-$ etc					

In this hypothesis, line 18, at instant 18, should have electro-magnetism resulting from:

0 1- 16- 120- 560- etc

The other lines of the neutron, at instant 18, should have respective resulting electromagnetism of:

0	0					line 1
0	1^-					line 2
0	1^-	1^-				line 3
0	1^-	2^-	1^-			line 4
0	1^-	3^-	3^-	1^-		line 5
etc until						
0	1^-	16^-	120^-	560^-	etc	line 18
i.e. in total:						
0	17^-	136^-	680^-	2380^-	etc	

Total equivalent, in numbers, to the mass (starting from column 10-2) of line 18 of schema 1(1). On schema 2(1) this total is shown under "adding of line 18". This electromagnetism is, by convention, called direct electromagnetism.

Examples for the lines a, b and c of schema 2(1):

	10^{-2}	10^{-4}	10^{-6}
line 1	0		
line 2	- 1		
resultant (line a)	- 1		

	10^{-2}	10^{-4}	10^{-6}
line 1	0		
line 2	+ 1		
line 3	- 2	- 1	
resultant (line b)	- 1	- 1	

	10^{-2}	10^{-4}	10^{-6}
line 1	0		
line 2	- 1		
line 3	+ 2	+ 1	
line 4	- 3	- 3	- 1
resultant (line c)	- 2	- 2	- 1

The total obtained in schema 2(1) is the following:

- 0.982884… corresponding to a mass of 1.614747… [see schema 1(1)].

As regards the mass of 1.430443 of schema 1(2), schema 2(2) provides the following result:

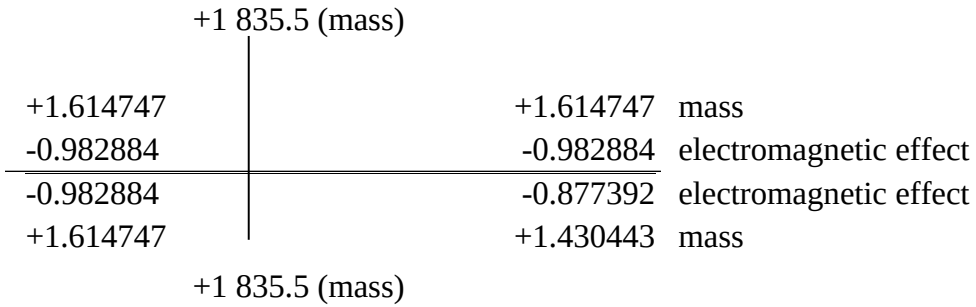
- 0.877392…

One remarks that: (- 0.982884 x 3 – 0.877392) / 2 = - 1.913022,
i.e. a possible value of the dipolar magnetic moment of the neutron.

The mass of the neutron and its dipolar magnetic moment are, in this hypothesis of the constitution of neutron, related in a simple mathematical way: **the value of the magnetic moment is obtained by modifying schema 1, which features the mass of the neutron, as shown in schema 2**. These relations are purely mathematical and cannot induce a physical relation between the two forces. However, one can imagine that the external mass of the trunk of the neutron is produced in a progressive manner, line by line, and that each line is annihilated in order to make place for the following until arriving at a stable stage. Massification and demassification would produce a negative and a positive electromagnetic state. That is what is suggested by the operation presented in schema 2. **A massification of a line, followed by a demassification of the following line would have a null balance as regards the value of the mass, but not as regards the value of the magnetic moment**. Moreover, the coefficients presented in schema 2, suggest a repetition of operations, in a progressively increasing number as the process of massification/demassification is older (see line "coefficient"), since the coefficient progresses with the number of columns concerned.

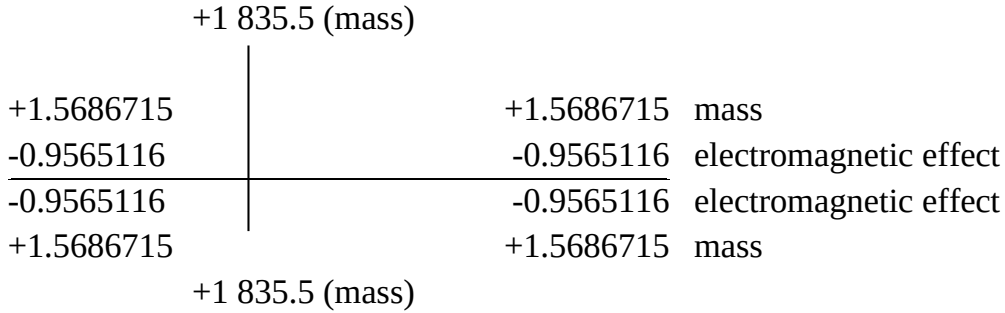
Schema of the neutron (mass and electro-magnetism)

In this hypothesis, the neutron can be considered as a quadrupolar system, featured as follows:



One notes that the masses and the dipolar magnetic moments are doubled. In fact, the neutron expresses itself in a dipolar manner by alternation of 4 poles, 2 by 2.

Taking into account the averages, the neutron could also be considered in the following way:



i.e. a mass of 1 838.63734 electrons or 939.544 MeV and a dipolar magnetic moment of -1.913023 nuclear magnetons.

The fractional quantum Hall effect

Nobel Lecture, December 8, 1998
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The fractional quantum Hall effect is a very counterintuitive physical phenomenon. It implies, that many electrons, acting in cooperation create new particles having a charge *smaller* than the charge of any individual electron. This is not the way things are supposed to be. A collection of objects may assemble to form a bigger object, or the parts may remain their size, but they don't create anything *smaller*. If the new particles were doubly-charged, it wouldn't be so paradoxical — electrons could 'just stick together" and form pairs. But fractional charges are very bizarre, indeed. Not only are they smaller than the charge of any constituent electron, **but they are exactly 1/3 or 1/5 or 1/7, etc**. of an electronic charge, depending on the conditions under which they have been prepared. **And yet we know with certainty, that none of these electrons has split up into pieces.**

Fractional charge is the most puzzling of the observations, but there are others. Quantum numbers — usually integers or half-integers - turn out to be also fractional, such as 2/5, 4/9, and 11/7, or even 5/23. **Moreover, bits of magnetic field can get attached to each electron, creating yet other objects.**

Such composite particles have properties very different from those of the electrons. They sometimes seem to be oblivious to huge magnetic fields and move in straight lines, although any bare electron would orbit on a very tight circle. Their mass is unrelated to the mass of the original electron but arises solely from interactions with their neighbors. More so, the attached magnetic field changes drastically the characteristics of the particles, from fermions to bosons and back to fermions, depending on the field strength. And finally, some of these composites are conjectured to coalesce and form pairs, vaguely similar to the formation of electron pairs in superconductivity. This would provide yet another astounding new state with weird properties.

All of these strange phenomena occur in **two-dimensional electron systems at low temperatures exposed to a high magnetic field - only electrons and a magnetic field**. The electrons reside within a solid, at the interface between two slightly different semiconductors. This is presently the smoothest plane we can fabricate to restrict the electrons' motion to two dimensions. Quantum mechanics does the rest.

Creation of electromagnetism

Direct electromagnetism

Let us go back to the reasoning of the preceding point concerning a mass of 100, which creates a mass of + 1, then – 1 and + 1. Each of these created masses have time to create masses of 1/100, which gives following schema:

	10°	10^{-2}		
100	+ 1			instant 1
	- 1	+ 1		
	+ 1	+ 1	- 1	instant 2

The first mass + 1 generates two masses of + 1 (10^{-2}), mass - 1 creates only one mass - 1 (10^{-2}), while the second mass + 1 has no time to create any mass. This will of course be done at the next instants.

The result of this operation is the following at instant 2:

100	+ 1 (10°)	+ 1 (10^{-2})	→ + 1 (10^{-2}) mass
		(+ 1 - 1) (10^{-2})	→ (+ 1 - 1) (10^{-2}) : mass + antimass

or	100	+ 1 (10°)	+ 1 (10^{-2})	mass
			- 1 (10^{-2})	electromagnetism (by convention mass + antimass = negative electromagnetism).

Then, there is the following schema:

	mass		electromagnetism		
	10^0	10^{-2}	10^0	10^{-2}	
100	+ 1				instant 1
	- 1	+ 1			
	+ 1		0	- 1	instant 2

This schema can be pursued until instant 18 for all mass lines $100 + (1 + 0.01)^x$, x varying between 1 and 17.

Given the following illustrating schema, which completes the schema for the mass acquisition for x = 6.

	mass							direct electromagnetism						
100	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}
(1)	+ 1													
(2)	- 1 + 1	+ 1						0	- 1					
(3)	- 1 + 1	- 1 + 2	+ 1					0 0	+ 1 - 2	- 1				
(4)	- 1 + 1	- 2 + 3	- 1 + 3	+ 1				0 0	+ 2 - 3	+ 1 - 3	- 1			
(5)	- 1 + 1	- 3 + 4	- 3 + 6	- 1 + 4	+ 1			0 0	+ 3 - 4	+ 3 - 6	+ 1 - 4	- 1		
(6)	- 1 + 1	- 4 + 5	- 6 +10	- 4 +10	- 1 + 5	+ 1		0 0	+ 4 - 5	+ 6 -10	+ 4 - 10	+ 1 - 5	- 1	
(7)	- 1 + 1	- 5 + 6	-10 +15	-10 +20	- 5 +15	- 1 + 6	+ 1	0 0	+ 5 - 6	+10 - 15	+10 -20	+5 -15	+1 - 6	- 1

At this stage one has identified the process of direct electromagnetism, so called by convention, for it is a direct byproduct of the process of creation/annihilation of mass.

Direct electromagnetism can be presented in the form of a balance:

	mass							direct electromagnetism						
100	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}
(1)	+ 1													
(2)	- 1 + 1	+ 1						0	- 1					
(3)	- 1 + 1	- 1 + 2	+ 1					0	- 1	- 1				
(4)	- 1 + 1	- 2 + 3	- 1 + 3	+ 1				0	- 1	- 2	- 1			
(5)	- 1 + 1	- 3 + 4	- 3 + 6	- 1 + 4	+ 1			0	- 1	- 3	- 3	- 1		
(6)	- 1 + 1	- 4 + 5	- 6 +10	- 4 +10	- 1 + 5	+ 1		0	- 1	- 4	- 6	- 4	- 1	
(7)	- 1 + 1	- 5 + 6	- 10 +15	- 10 +20	- 5 +15	- 1 + 6	+ 1	0	- 1	- 5	-10	-10	- 5	- 1

Indirect electromagnetism

At preceding point one has seen that the masses + 1, - 1 and + 1, were yielding mass of 0.01 and an electromagnetic effect of – 0.01. The electromagnetic effect was induced by a delay in phase of the antimass on the mass. At the following phase, the antimass recovers its delay.

Thus, there is :

	mass			direct electromagnetism		
	10^0	10^{-2}	10^{-4}	10^0	10^{-2}	10^{-4}
100	+ 1					
	- 1 + 1	+ 1		0	- 1	
	- 1 + 1	- 1 + 2	+ 1	0 0	+ 1 - 2	- 1

Since the positive electromagnetism is created simultaneously with the negative electro- magnetism accompanying the new massic creation, there is partial annihilation and the direct electromagnetism of + 1 (10^{-2}) is balanced by a value of - 2 (10^{-2}) – 1 (10^{-4}).

Direct electromagnetism is derived from the crossing of two massic lines, due to the phase delay of antimass on mass. Indirect electromagnetism has at least one phase delay more. It is derived from three or more massic lines. These lines form negative electromagnetism and positive electromagnetism at a given instant, whereof the effect of annihilation.

Given the following illustrative schema, coming after the schema of the acquisition of mass and direct electromagnetism for x = 6.

	Mass							direct and indirect electromagnetism							
100	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	
(1)	+1														
(2)	- 1 +1	+1						0	-1						direct **e**-m
(3)	- 1 +1	-1 +2	+1					0 0	-1 -1	 -1					indirect **e**-m direct **e**-m
(4)	-1 +1	-2 +3	-1 +3	 +1				0 0 0	+1 -2 -1	 -2	 -1				indirect **e**-m direct **e** -m
(5)	-1 +1	-3 +4	-3 +6	-1 +4	 +1			0 0 0 0	-1 +2 -3 -1	 +1 -3 -3	 -1 -3	 -1			indirect **e**-m direct **e**-m
(6)	-1 +1	-4 +5	-6 +10	-4 +10	-1 +5	 +1		0 0 0 0 0	+1 -2 +3 -4 -1	 -1 +3 -6 -4	 -6	 -1 -4	 -1		indirect **e**-m direct **e**-m
(7)	-1 +1	-5 +6	-10 +15	-10 +20	-5 +15	-1 +6	 +1	0 0 0 0 0 0	-1 +2 -3 +4 -5 -1	 +1 -3 +6 -10 -5	 -1 +4 -10 -10	 +1 -5 - 5	 -1 -1	 	indirect **e**-m direct **e**-m

This process marks the beginning of indirect electromagnetism. This form of electromagnetism is extremely interesting, since it allows us to "return" to the initial state of masses and antimasses which compose the nucleon, at least from level 10^{-2} or below.

Schema 1 (1) : Mechanism of acquisition of neutron mass

10^0	trunk	10^0	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{-14}	10^{-16}	10^{-18}	10^{-20}	10^{-22}	10^{-24}	10^{-26}	10^{-28}	10^{-30}	10^{-32}	10^{-34}	line n°
1	100	1																		1
1	100	1	1																	2
1	100	1	2	1																3
1	100	1	3	3	1															4
1	100	1	4	6	4	1														5
1	100	1	5	10	10	5	1													6
1	100	1	6	15	20	15	6	1												7
1	100	1	7	21	35	35	21	7	1											8
1	100	1	8	28	56	70	56	28	8	1										9
1	100	1	9	36	84	126	126	84	36	9	1									10
1	100	1	10	45	120	210	252	210	120	45	10	1								11
1	100	1	11	55	165	330	462	462	330	165	55	11	1							12
1	100	1	12	66	220	495	792	924	792	495	220	66	12	1						13
1	100	1	13	78	286	715	1287	1716	1716	1287	715	286	78	13	1					14
1	100	1	14	91	364	1001	2002	3003	3432	3003	2002	1001	364	91	14	1				15
1	100	1	15	105	455	1365	3003	5005	6435	6435	5005	3003	1365	455	105	15	1			16
1	100	1	16	120	560	1820	4368	8008	11440	12870	11440	8008	4368	1820	560	120	16	1		17
1	100	1	17	136	680	2380	6188	12376	19448	24310	24310	19448	12376	6188	2380	680	136	17	1	18
18	1800	18	153	816	3060	8568	18564	31824	43758	48620	43758	31824	18564	8568	3060	816	153	18	1	

i.e. +19.614747568666486078104999868175318 01 + 1800 + 19.614747568666486078104999868175318 01

Schema 1 (2) : Mechanism of acquisition of neutron mass

100	trunk	10^{0}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{-14}	10^{-16}	10^{-18}	10^{-20}	10^{-22}	10^{-24}	10^{-26}	10^{-28}	10^{-30}	10^{-32}	10^{-34}	line n°
1	100																			1
1	100	1																		2
1	100	1	1																	3
1	100	1	2	1																4
1	100	1	3	3	1															5
1	100	1	4	6	4	1														6
1	100	1	5	10	10	5	1													7
1	100	1	6	15	20	15	6	1												8
1	100	1	7	21	35	35	21	7	1											9
1	100	1	8	28	56	70	56	28	8	1										10
1	100	1	9	36	84	126	126	84	36	9	1									11
1	100	1	10	45	120	210	252	210	120	45	10	1								12
1	100	1	11	55	165	330	462	462	330	165	55	11	1							13
1	100	1	12	66	220	495	792	924	792	495	220	66	12	1						14
1	100	1	13	78	286	715	1287	1716	1716	1287	715	286	78	13	1					15
1	100	1	14	91	364	1001	2002	3003	3432	3003	2002	1001	364	91	14	1				16
1	100	1	15	105	455	1365	3003	5005	6435	6435	5005	3003	1365	455	105	15	1			17
1	100	1	16	120	560	1820	4368	8008	11440	12870	11440	8008	4368	1820	560	120	16	1		18
18	1800	17	136	680	2380	6188	12376	19448	24310	24310	19448	12376	6188	2380	680	136	17	1	0	

i.e. +19.614747568666486078104999868175318 01 + 1800 + 18.430443137293550572381186813617 01

Schema 2 (1) : Acquisition of dipolar magnetic moment of neutron

	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{-14}	10^{-16}	10^{-18}	10^{-20}	10^{-22}	10^{-24}	10^{-26}	10^{-28}	10^{-30}	10^{-32}	10^{-34}
line 1 - line 2 = a	-1																
- a - line 3 = b	-1	-1															
- b - line 4 = c	-2	-2	-1														
- c - line 5 = d	-2	-4	-3	-1													
- d - line 6 = e	-3	-6	-7	-4	-1												
- e - line 7 = f	-3	-9	-13	-11	-5	-1											
- f - line 8 = g	-4	-12	-22	-24	-16	-6	-1										
- g - line 9 = h	-4	-16	-34	-46	-40	-22	-7	-1									
- h - line 10 =i	-5	-20	-50	-80	-86	-62	-29	-8	-1								
- i - line 11 = j	-5	-25	-70	-130	-166	-148	-91	-37	-9	-1							
- j - line 12 = k	-6	-30	-95	-200	-296	-314	-239	-128	-46	-10	-1						
- k - line 13 = l	-6	-36	-125	-295	-496	-610	-553	-367	-174	-56	-11	-1					
- l - line 14 = m	-7	-42	-161	-420	-791	-1106	-1163	-920	-541	-230	-67	-12	-1				
- m - line 15 = n	-7	-49	-203	-581	-1211	-1897	-2269	-2083	-1461	-771	-297	-79	-13	-1			
- n - line 16 = o	-8	-56	-252	-784	-1792	-3108	-4166	-4352	-3544	-2232	-1068	-376	-92	-14	-1		
- o - line 17 = p	-8	-64	-308	-1036	-2576	-4900	-7274	-8518	-7896	-5776	-3300	-1444	-468	-106	-15	-1	
Total a → p	-72	-372	-1344	-3612	-7476	-12174	-15792	-16414	-13672	-9076	-4744	-1912	-574	-121	-16	-1	
Coefficient	x 1	x 2	x 3	x 4	x 5	x 6	x 7	x 8	x 9	x 10	x 11	x 12	x 13	x 14	x 15	x 16	
(Total a → p) x coefficient	-72	-744	-4032	-14448	-37380	-73044	-110544	-131312	-123048	-90760	-52184	-22944	-7462	-1694	-240	-16	
Adding of line 18	-17	-136	-680	-2380	-6188	-12376	-19448	-24310	-24310	-19448	-12376	-6188	-2380	-680	-136	-17	-1
General total	-89	-880	-4712	-16828	-43568	-85420	-129992	-155622	-147358	-110208	-64560	-29132	-9842	-2374	-376	-33	-1

i.e. -0.98288472353563066656523065777633 01

Schema 2 (2) : Acquisition of dipolar magnetic moment of neutron

	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}	10^{-12}	10^{-14}	10^{-16}	10^{-18}	10^{-20}	10^{-22}	10^{-24}	10^{-26}	10^{-28}	10^{-30}	10^{-32}
line 2 - line 3 = a'	-1															
- a' - line 4 = b'	-1	-1														
- b' - line 5 = c'	-2	-2	-1													
- c' - line 6 = d'	-2	-4	-3	-1												
- d' - line 7 = e'	-3	-6	-7	-4	-1											
- e' - line 8 = f'	-3	-9	-13	-11	-5	-1										
- f' - line 9 = g'	-4	-12	-22	-24	-16	-6	-1									
- g' - line 10 = h'	-4	-16	-34	-46	-40	-22	-7	-1								
- h' - line 11 = i'	-5	-20	-50	-80	-86	-62	-29	-8	-1							
- i' - line 12 = j'	-5	-25	-70	-130	-166	-148	-91	-37	-9	-1						
- j' - line 13 = k'	-6	-30	-95	-200	-296	-314	-239	-128	-46	-10	-1					
- k' - line 14 = l'	-6	-36	-125	-295	-496	-610	-553	-367	-174	-56	-11	-1				
- l' - line 15 = m'	-7	-42	-161	-420	-791	-1106	-1163	-920	-541	-230	-67	-12	-1			
- m' - line 16 = n'	-7	-49	-203	-581	-1211	-1897	-2269	-2083	-1461	-771	-297	-79	-13	-1		
- n' - line 17 = o'	-8	-56	-252	-784	-1792	-3108	-4166	-4352	-3544	-2232	-1068	-376	-92	-14	-1	
Total a' → o'	-64	-308	-1036	-2576	-4900	-7274	-8518	-7896	-5776	-3300	-1444	-468	-106	-15	-1	
Coefficient	x 1	x 2	x 3	x 4	x 5	x 6	x 7	x 8	x 9	x 10	x 11	x 12	x 13	x 14	x 15	
(Total a' → o') x coefficient	-64	-616	-3108	-10304	-24500	-43644	-59626	-63168	-51984	-33000	-15884	-5616	-1378	-210	-15	
Adding of line 18	-16	-120	-560	-1820	-4368	-8008	-11440	-12870	-11440	-8008	-4368	-1820	-560	-120	-16	-1
General total	-80	-736	-3668	-12124	-28868	-51652	-71066	-76038	-63424	-41008	-20252	-7436	-1938	-330	-31	-1

i.e. -0.8773921791703276361126554130 3101

Conclusions

1. The mass of neutron (and proton) is broken down in a different way than generally accepted.

I.e.19.746 MeV =mass of neutron - 1800 electron masses
19.746/35.5 (number of lines) =0.5562MeV
0.5562 MeVx4=2.2246MeV =NP=binding energy of Deuterium
19.746/4=4.9365MeV= NN binding energy
NN +1.25NP=NPP or He3 binding energy
2NN-1.25/2NP =NNP or binding energy of Tritium

2. Mass of neutron (and proton) is correlated to its dipolar magnetic moment as we have seen, through action of antimass .

3. Antimass not yet recognized. How does the system work?
Actually, a particle entering our space time acquires a mass. After a Planck instant of attendance that mass is leaving our space time and loses that mass, accounted as a mass deficit, or antimass. This is the explanation for discontinuity of matter.

4. We should dig deeper in order to unify mass, electromagnetism and binding energy.
Binding energy or strong interaction is the key for energy release or LENR.