The Jiang Periodic Table of Elements

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ABSTRACT

Using the stable number theory, Jiang's calculates the best electron configurations of the elements and not from experimental data (Chun-Xuan, 1988, Jiang, 1998; Jiang, 2002). Jiang makes the Jiang periodic table of the elements.

In studying the stability of the many-body problem we suggest two principles (Jiang, 1981; Chun-Xuan, 1979; Jiang, 1985; Jiang, 1986; Jiang, 1988; Chun-Xuan, 1988, Jiang, 1998; Jiang, 2002).

(1) The prime number principle. A prime number is irreducible in the integers; it seems, therefore, natural to associate it with the most stable subsystem. We prove that 1, 3, 5, 7, 11, 23, 47 are the most stable primes.

(2) The symmetric principle. The most stable configuration of two prime numbers is then the stable symmetric system in nature. We prove that 2, 4, 6, 10, 14, 22, 46, 94 are the most stable even numbers. The stability can be defined as long life and existence in nature, and instability as short life or non-existence in nature.

In this paper by using the prime number principle and the symmetric principle we calculate the best electron configurations of the elements. Total quantum number and orbital quantum number determine the best electron configurations of the elements

Electron shells: $n=1$ 2 3 4 5 6...
K L M N O P...

Electron subshells: $2(2l+1)=2$ 6 10 14 18 22...
s p d f g h...

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An atomic subshell that contains its full quota of electrons is said to be closed. A closed s subshell $(l=0)$ holds two electrons, a closed p subshell $(l=1)$ six electrons, a closed d subshell $(l=2)$ ten electrons, a closed f subshell $(l=3)$ fourteen electrons, these subshells are the most stable, a closed g subshell $(l=4)$ eighteen electrons is the most unstable. Using the symmetric principle it has been proved the $2(2l+1)=2,6,10$ and 14 are stable and $2(2l+1)=18$ is unstable. The $s, p.d$, and f subshells are stable and the g subshell is unstable (Jiang, 1985).

Table 1 shows the best electron configurations of the elements. From 1 to 92 of the atomic numbers every subshell is stable. It has been proved that the last stable element that occurs naturally is uranium with an atomic number of 92 and there are only 92 stable elements in nature. Since $5g$ subshell is unstable, the elements 93-110 are unstable. Since $5g$ is unstable, $6s, bp, 6d, 6f, 6g$ and $6h$ subshells are unstable. Therefore, the elements 111-182 are unstable. Mendeleev electronic configuration of the elements is wrong (Scerri, 2007) to see table 3.

Using the 1s,2s,3s,4s and 5s of table 1, we make the Jiang periodic table of elements with five periods. Table 2 shows the relationship between the outermost subshell electron configurations and the Jiang periodic table. The Jiang periodic table reflects the order in which atomic orbitals are filled. The s orbitals are filled in the two rows. The p orbitals are filled in the six rows. The d orbitals are filled in the ten rows. The f orbitals are filled in the fourteen rows. The g orbitals are filled in the eighteen rows.

Table 1: *The Best Electron Configuration of the Elements*

Z	Sym	*K*	*L*		*M*			*N*				*O*				
		1*s*	2*s*	2*p*	3*s*	3*p*	3*d*	4s	4p	4d	4f	5s	5p	5d	5f	5g
1	H	1														
2	He	2														
3	Li	2	1													
4	Be	2	2													
5	B	2	2	1												
6	C	2	2	2												
7	N	2	2	3												
8	O	2	2	4												
9	F	2	2	5												
10	Ne	2	2	6												
11	Na	2	2	6	1											
12	Mg	2	2	6	2											
13	Al	2	2	6	2	1										
14	Si	2	2	6	2	2										
15	P	2	2	6	2	3										
16	S	2	2	6	2	4										
17	Cl	2	2	6	2	5										
18	Ar	2	2	6	2	6										
19	K	2	2	6	2	6	1									
20	Ca	2	2	6	2	6	2									
21	Sc	2	2	6	2	6	3									
22	Ti	2	2	6	2	6	4									
23	V	2	2	6	2	6	5									
24	Cr	2	2	6	2	6	6									
25	Mn	2	2	6	2	6	7									
26	Fe	2	2	6	2	6	8									
27	Co	2	2	6	2	6	9									
28	Ni	2	2	6	2	6	10									
29	Cu	2	2	6	2	6	10	1								
30	Zn	2	2	6	2	6	10	2								
31	Ga	2	2	6	2	6	10	2	1							
32	Ge	2	2	6	2	6	10	2	2							
33	As	2	2	6	2	6	10	2	3							
34	Se	2	2	6	2	6	10	2	4							

35	Br	2	2	6	2	6	10	2	5						
36	Kr	2	2	6	2	6	10	2	6						
37	Rb	2	2	6	2	6	10	2	6	1					
38	Sr	2	2	6	2	6	10	2	6	2					
39	Y	2	2	6	2	6	10	2	6	3					
40	Zr	2	2	6	2	6	10	2	6	4					
41	Nb	2	2	6	2	6	10	2	6	5					
42	Mo	2	2	6	2	6	10	2	6	6					
43	Tc	2	2	6	2	6	10	2	6	7					
44	Ru	2	2	6	2	6	10	2	6	8					
45	Rh	2	2	6	2	6	10	2	6	9					
46	Pd	2	2	6	2	6	10	2	6	10					
47	Ag	2	2	6	2	6	10	2	6	10	1				
48	Cd	2	2	6	2	6	10	2	6	10	2				
49	In	2	2	6	2	6	10	2	6	10	3				
50	Sn	2	2	6	2	6	10	2	6	10	4				
51	Sb	2	2	6	2	6	10	2	6	10	5				
52	Te	2	2	6	2	6	10	2	6	10	6				
53	I	2	2	6	2	6	10	2	6	10	7				
54	Xe	2	2	6	2	6	10	2	6	10	8				
55	Cs	2	2	6	2	6	10	2	6	10	9				
56	Ba	2	2	6	2	6	10	2	6	10	10				
57	La	2	2	6	2	6	10	2	6	10	11				
58	Ce	2	2	6	2	6	10	2	6	10	12				
59	Pr	2	2	6	2	6	10	2	6	10	13				
60	Nd	2	2	6	2	6	10	2	6	10	14				
61	Pm	2	2	6	2	6	10	2	6	10	14	1			
62	Sm	2	2	6	2	6	10	2	6	10	14	2			
63	Eu	2	2	6	2	6	10	2	6	10	14	2	1		
64	Gd	2	2	6	2	6	10	2	6	10	14	2	2		
65	Tb	2	2	6	2	6	10	2	6	10	14	2	3		
66	Dy	2	2	6	2	6	10	2	6	10	14	2	4		
67	Ho	2	2	6	2	6	10	2	6	10	14	2	5		
68	Er	2	2	6	2	6	10	2	6	10	14	2	6		
69	Tm	2	2	6	2	6	10	2	6	10	14	2	6	1	
70	Yb	2	2	6	2	6	10	2	6	10	14	2	6	2	
71	Lu	2	2	6	2	6	10	2	6	10	14	2	6	3	
72	Hf	2	2	6	2	6	10	2	6	10	14	2	6	4	
73	Ta	2	2	6	2	6	10	2	6	10	14	2	6	5	
74	W	2	2	6	2	6	10	2	6	10	14	2	6	6	
75	Re	2	2	6	2	6	10	2	6	10	14	2	6	7	
76	Os	2	2	6	2	6	10	2	6	10	14	2	6	8	
77	Ir	2	2	6	2	6	10	2	6	10	14	2	6	9	
78	Pt	2	2	6	2	6	10	2	6	10	14	2	6	10	
79	Au	2	2	6	2	6	10	2	6	10	14	2	6	10	1
80	Hg	2	2	6	2	6	10	2	6	10	14	2	6	10	2
81	Tl	2	2	6	2	6	10	2	6	10	14	2	6	10	3
82	Pb	2	2	6	2	6	10	2	6	10	14	2	6	10	4
83	Bi	2	2	6	2	6	10	2	6	10	14	2	6	10	5
84	Po	2	2	6	2	6	10	2	6	10	14	2	6	10	6
85	At	2	2	6	2	6	10	2	6	10	14	2	6	10	7
86	Rn	2	2	6	2	6	10	2	6	10	14	2	6	10	8
87	Fr	2	2	6	2	6	10	2	6	10	14	2	6	10	9

88	Ra	2	2	6	2	6	10	2	6	10	14	2	6	10	10	
89	Ac	2	2	6	2	6	10	2	6	10	14	2	6	10	11	
90	Th	2	2	6	2	6	10	2	6	10	14	2	6	10	12	
91	Pa	2	2	6	2	6	10	2	6	10	14	2	6	10	13	
92	U	2	2	6	2	6	10	2	6	10	14	2	6	10	14	
93	Np	2	2	6	2	6	10	2	6	10	14	2	6	10	14	1
94	Pu	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2
95	Am	2	2	6	2	6	10	2	6	10	14	2	6	10	14	3
96	Cm	2	2	6	2	6	10	2	6	10	14	2	6	10	14	4
97	Bk	2	2	6	2	6	10	2	6	10	14	2	6	10	14	5
98	Cf	2	2	6	2	6	10	2	6	10	14	2	6	10	14	6
99	Es	2	2	6	2	6	10	2	6	10	14	2	6	10	14	7
100	Fm	2	2	6	2	6	10	2	6	10	14	2	6	10	14	8
101	Md	2	2	6	2	6	10	2	6	10	14	2	6	10	14	9
102	No	2	2	6	2	6	10	2	6	10	14	2	6	10	14	10
103	Lr	2	2	6	2	6	10	2	6	10	14	2	6	10	14	11
104	Rf	2	2	6	2	6	10	2	6	10	14	2	6	10	14	12
105	Db	2	2	6	2	6	10	2	6	10	14	2	6	10	14	13
106	Sg	2	2	6	2	6	10	2	6	10	14	2	6	10	14	14
107	Bh	2	2	6	2	6	10	2	6	10	14	2	6	10	14	15
108	Hs	2	2	6	2	6	10	2	6	10	14	2	6	10	14	16
109	Mt	2	2	6	2	6	10	2	6	10	14	2	6	10	14	17
110	Ds	2	2	6	2	6	10	2	6	10	14	2	6	10	14	18

Table 2: *The Jiang periodic table of elements.*

Atomic Orbitals	Outermost Subshell electrons	1. Period	2. Period	3. Period	4. Period	5. Period
s	1 2	1 H 2 He	3 Li 4 Be	11 Na 12 Mg	29 Cu 30 Zn	61 Pm 62 Sm
p	1 2 3 4 5 6		5 B 6 C 7 N 8 O 9 F 10 Ne	13 Al 14 Si 15 P 16 S 17 Cl 18 Ar	31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr	63 Eu 64 Gd 65 Tb 66 Dy 67 Ho 68 Er
d	1 2 3 4 5 6 7 8 9 10	Stable elements		19 K 20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni	37 Rb 38 Sr 39 Y 40 Zr 41 Nb 42 Mo 43 Tc 44 Ru 45 Rh 46 Pd	69 Tm 70 Yb 71 Lu 72 Hf 73 Ta 74 W 75 Re 76 Os 77 Ir 78 Pt
f	1 2 3 4 5 6 7 8 9 10 11 12 13 14	Stable elements			47 Ag 48 Cd 49 In 50 Sn 51 Sb 52 Te 53 I 54 Xe 55 Cs 56 Ba 57 La 58 Ce 59 Pr 60 Nd	79 Au 80 Hg 81 Tl 82 Pb 83 Bi 84 Po 85 At 86 Rn 87 Fr 88 Ra 89 Ac 90 Th 91 Pa 92 U
g	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Unstable elements				93 Np 94 Pu 95 Am 96 Cm 97 Bk 98 Cf 99 Es 100 Fm 101 Md 102 No 103 Lr 104 Rf 105 Db 106 Sg 107 Bh 108 Hs 109 Mt 110 Ds

Table 3: *Mendeleev electronic configuration of the elements*

Num.	Symbol	K	L		M			N				O				P				Q	
1. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	7p
1	H	1																			
2	He	2																			
2. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	7p
3	Li	2	1																		
4	Be	2	2																		
5	B	2	2	1																	
6	C	2	2	2																	
7	N	2	2	3																	
8	O	2	2	4																	
9	F	2	2	5																	
10	Ne	2	2	6																	
3. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	7p
11	Na	2	2	6	1																
12	Mg	2	2	6	2																
13	Al	2	2	6	2	1															
14	Si	2	2	6	2	2															
15	P	2	2	6	2	3															
16	S	2	2	6	2	4															
17	Cl	2	2	6	2	5															
18	Ar	2	2	6	2	6															
4. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	
19	K	2	2	6	2	6	..	1													
20	Ca	2	2	6	2	6	..	2													
21	Sc	2	2	6	2	6	1	2													
22	Ti	2	2	6	2	6	2	2													
23	V	2	2	6	2	6	3	2													
24	Cr	2	2	6	2	6	5	1													
25	Mn	2	2	6	2	6	5	2													
26	Fe	2	2	6	2	6	6	2													
27	Co	2	2	6	2	6	7	2													
28	Ni	2	2	6	2	6	8	2													
29	Cu	2	2	6	2	6	10	1													
30	Zn	2	2	6	2	6	10	2													
31	Ga	2	2	6	2	6	10	2	1												
32	Ge	2	2	6	2	6	10	2	2												
33	As	2	2	6	2	6	10	2	3												
34	Se	2	2	6	2	6	10	2	4												
35	Br	2	2	6	2	6	10	2	5												
36	Kr	2	2	6	2	6	10	2	6												
5. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	7p
37	Rb	2	2	6	2	6	10	2	6	..	..	1									
38	Sr	2	2	6	2	6	10	2	6	..	..	2									
39	Y	2	2	6	2	6	10	2	6	1	..	2									
40	Zr	2	2	6	2	6	10	2	6	2	..	2									
41	Nb	2	2	6	2	6	10	2	6	4	..	1									
42	Mo	2	2	6	2	6	10	2	6	5	..	1									
43	Tc	2	2	6	2	6	10	2	6	6	..	1									
44	Ru	2	2	6	2	6	10	2	6	7	..	1									
45	Rh	2	2	6	2	6	10	2	6	8	..	1									

46	Pd	2	2	6	2	6	10	2	6	10	..	..									
47	Ag	2	2	6	2	6	10	2	6	10	..	1									
48	Cd	2	2	6	2	6	10	2	6	10	..	2									
49	In	2	2	6	2	6	10	2	6	10	..	2	1								
50	Sn	2	2	6	2	6	10	2	6	10	..	2	2								
51	Sb	2	2	6	2	6	10	2	6	10	..	2	3								
52	Te	2	2	6	2	6	10	2	6	10	..	2	4								
53	I	2	2	6	2	6	10	2	6	10	..	2	5								
54	Xe	2	2	6	2	6	10	2	6	10	..	2	6								
6. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	7p
55	Cs	2	2	6	2	6	10	2	6	10	..	2	6	..	..	1					
56	Ba	2	2	6	2	6	10	2	6	10	..	2	6	..	..	2					
57	La	2	2	6	2	6	10	2	6	10	..	2	6	1	..	2					
58	Ce	2	2	6	2	6	10	2	6	10	2	2	6	..	..	2					
59	Pr	2	2	6	2	6	10	2	6	10	3	2	6	..	..	2					
60	Nd	2	2	6	2	6	10	2	6	10	4	2	6	..	..	2					
61	Pm	2	2	6	2	6	10	2	6	10	5	2	6	..	..	2					
62	Sm	2	2	6	2	6	10	2	6	10	6	2	6	..	..	2					
63	Eu	2	2	6	2	6	10	2	6	10	7	2	6	..	..	2					
64	Gd	2	2	6	2	6	10	2	6	10	7	2	6	1	..	2					
65	Tb	2	2	6	2	6	10	2	6	10	9	2	6	..	..	2					
66	Dy	2	2	6	2	6	10	2	6	10	10	2	6	..	..	2					
67	Ho	2	2	6	2	6	10	2	6	10	11	2	6	..	..	2					
68	Er	2	2	6	2	6	10	2	6	10	12	2	6	..	..	2					
69	Tm	2	2	6	2	6	10	2	6	10	13	2	6	..	..	2					
70	Yb	2	2	6	2	6	10	2	6	10	14	2	6	..	..	2					
71	Lu	2	2	6	2	6	10	2	6	10	14	2	6	1	..	2					
72	Hf	2	2	6	2	6	10	2	6	10	14	2	6	2	..	2					
73	Ta	2	2	6	2	6	10	2	6	10	14	2	6	3	..	2					
74	W	2	2	6	2	6	10	2	6	10	14	2	6	4	..	2					
75	Re	2	2	6	2	6	10	2	6	10	14	2	6	5	..	2					
76	Os	2	2	6	2	6	10	2	6	10	14	2	6	6	..	2					
77	Ir	2	2	6	2	6	10	2	6	10	14	2	6	7	..	2					
78	Pt	2	2	6	2	6	10	2	6	10	14	2	6	9	..	1					
79	Au	2	2	6	2	6	10	2	6	10	14	2	6	10	..	1					
80	Hg	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2					
81	Tl	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	1				
82	Pb	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	2				
83	Bi	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	3				
84	Po	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	4				
85	At	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	5				
86	Rn	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	6				
7. Period		1s	2s	2p	3s	3p	3d	4s	4p	4d	4f	5s	5p	5d	5f	6s	6p	6d	6f	7s	7p
87	Fr	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	6	..	..	1	
88	Ra	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	6	..	..	2	
89	Ac	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	6	1	..	2	
90	Th	2	2	6	2	6	10	2	6	10	14	2	6	10	..	2	6	2	..	2	
91	Pa	2	2	6	2	6	10	2	6	10	14	2	6	10	2	2	6	1	..	2	
92	U	2	2	6	2	6	10	2	6	10	14	2	6	10	3	2	6	1	..	2	
93	Np	2	2	6	2	6	10	2	6	10	14	2	6	10	4	2	6	1	..	2	
94	Pu	2	2	6	2	6	10	2	6	10	14	2	6	10	6	2	6	..	..	2	
95	Am	2	2	6	2	6	10	2	6	10	14	2	6	10	7	2	6	..	..	2	
96	Cm	2	2	6	2	6	10	2	6	10	14	2	6	10	7	2	6	1	..	2	

97	Bk	2	2	6	2	6	10	2	6	10	14	2	6	10	9	2	6	..	..	2	
98	Cf	2	2	6	2	6	10	2	6	10	14	2	6	10	10	2	6	..	..	2	
99	Es	2	2	6	2	6	10	2	6	10	14	2	6	10	11	2	6	..	..	2	
100	Fm	2	2	6	2	6	10	2	6	10	14	2	6	10	12	2	6	..	..	2	
101	Md	2	2	6	2	6	10	2	6	10	14	2	6	10	13	2	6	..	..	2	
102	No	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	..	..	2	
103	Lr	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	1	..	2	
104	Rf	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	2	..	2	
105	Db	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	3	..	2	
106	Sg	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	4	..	2	
107	Bh	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	5	..	2	
108	Hs	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	6	..	2	
109	Mt	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	7	..	2	
110	Uun	2	2	6	2	6	10	2	6	10	14	2	6	10	14	2	6	9	..	1	

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