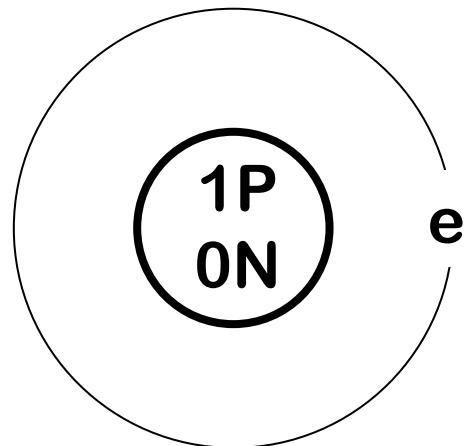
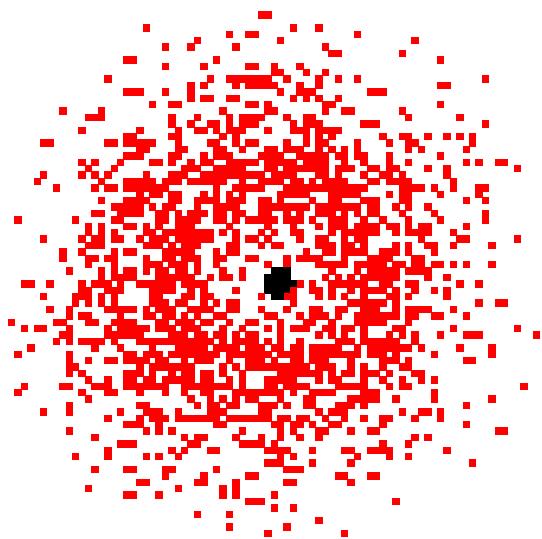


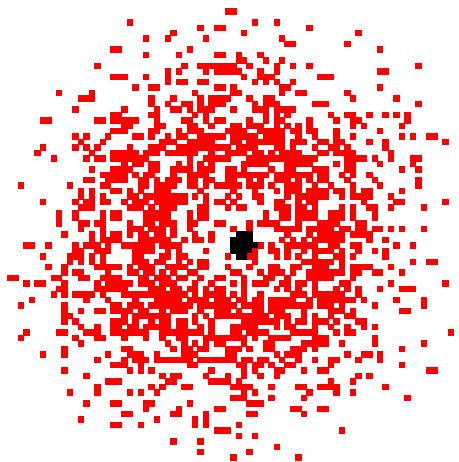
Orbitals vs. Orbits



a 1s orbital

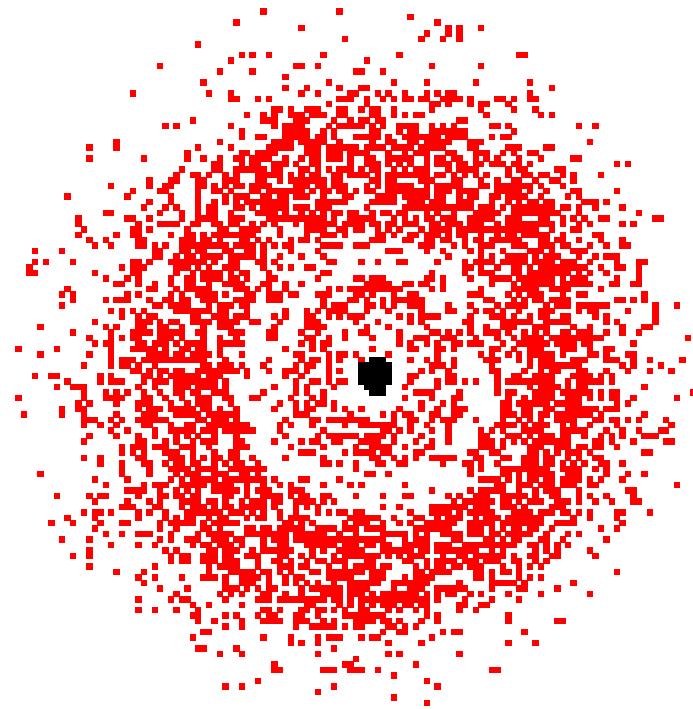
<http://winter.group.shef.ac.uk/orbitron/AOs/1s/index.html>

Spherical Orbitals



a 1s orbital

1s



a 2s orbital

<http://winter.group.shef.ac.uk/orbitron/AOs/1s/index.html>

PERIODIC CHART OF THE ELEMENTS

IA	IIA	IIIB	IVB	VB	VIIB	VIII	IB	IIB	IIIA	IVA	VA	VIA	VIIA	INERT GASES			
1 H 1.00797														1 H 1.00797			
3 Li 6.939	4 Be 9.0122													2 He 4.0026			
11 Na 22.9898	12 Mg 24.312																
19 K 39.10	20 Ca 40.08	21 Sc 44.956	22 Ti 47.90	23 V 50.942	24 Cr 51.996	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.71	29 Cu 63.54	30 Zn 65.37	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.909	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.905	40 Zr 91.22	41 Nb 92.906	42 Mo 95.94	43 Tc (98)	44 Ru (107)	45 Rh 102.905	46 Pd 106.4	47 Ag 107.870	48 Cd 112.40	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.904	54 Xe 131.30
55 Cs 132.905	56 Ba 137.34	*57 La 138.91	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Rf 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.09	79 Au 196.967	80 Hg 200.59	81 Tl 204.37	82 Pb 207.19	83 Bi 208.980	84 Po (210)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	+89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (265)	107 Bh (265)	108 Hs (266)	109 Mt (266)	110 ?	111 ?	112 ?						

Numbers in parenthesis are mass numbers of most stable or most common isotope.

Atomic weights corrected to conform to the 1963 values of the Commission on Atomic Weights.

The group designations used here are the former Chemical Abstract Service numbers.

* Lanthanide Series

58 Ce 140.12	59 Pr 140.907	60 Nd 144.24	61 Pm (147)	62 Sm 150.35	63 Eu 151.96	64 Gd 157.2	65 Tb 1924	66 Dy 162.50	67 Ho 164.930	68 Er 167.26	69 Tm 168.934	70 Yb 173.04	71 Lu 174.97
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† Actinide Series

90 Th 232.038	91 Pa (231)	92 U 238.03	93 Np (237)	94 Pu (242)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (249)	99 Es (254)	100 Fm (253)	101 Md (256)	102 No (256)	103 Lr (257)
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S

D

F

P

PERIODIC CHART OF THE ELEMENTS

INERT GASES

1	H	2
1.00797		1.00797 4.0026
1s		
2s		2p
3s		3p
4s		4p
5s		5p
6s		6p
7s		
1	H	2
1.00797	1.00797	4.0026
3	4	
L	Se	
6.939	9.0122	
11	12	
N	Mg	
22.9896	24.312	
19	20	
K	Sa	
39.102	40.08	
21	22	
Sc	Ti	
44.956	47.90	
23	24	
V	Cr	
50.942	51.996	
25	26	
Mn	Co	
54.9380	55.847	
27	28	
58.9332	58.71	
29	30	
Ni	Cu	
63.54	65.37	
31	32	
Ga	Ge	
69.72	72.59	
33	34	
As	Se	
35	36	
Br	Kr	
37	38	
R	Sr	
85.47	87.62	
39	40	
Y	Zr	
88.905	91.22	
41	42	
Nb	Mo	
92.906	95.94	
43	44	
Tc	Rh	
(99)	161.07	
45	46	
Pd	Ag	
	102.905	
47	48	
Cd	In	
	106.4	
49	50	
Sn	Sn	
	107.670	
51	52	
S	Te	
	112.40	
53	54	
I	Xe	
	114.82	
55	56	
C	Sa	
132.905	137.34	
*57	72	
La	Hf	
138.91	178.49	
73	74	
Ta	W	
180.948	183.85	
75	76	
Re	Ir	
186.2	190.2	
77	78	
Pt	Au	
	192.2	
79	80	
Hg	Tl	
	195.09	
81	82	
Pb	B	
	196.967	
83	84	
At	At	
	200.59	
85	86	
Rn	Rn	
	204.37	
87	88	
Fr	Ac	
(223)	(226)	
104	105	
Rf	Db	
(261)	(262)	
106	107	
Sg	Bh	
(266)	(262)	
108	109	
Mt	?	
(265)	(266)	
110	111	
?	?	
(271)	(272)	
112	?	
(277)		

Numbers in parenthesis are mass numbers of most stable or most common isotope.

Atomic weights corrected to conform to the 1963 values of the Commission on Atomic Weights.

The group designations used here are the former Chemical Abstract Service numbers.

* Lanthanide Series

The Lanthanide Elements

\pm Actinide Series

90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	K	Cf	Es	Fm	Md	No	Lr
232.038	(231)	238.03	(237)	(242)	(243)	(247)	(247)	(249)	(254)	(253)	(256)	(256)	(257)

15

P

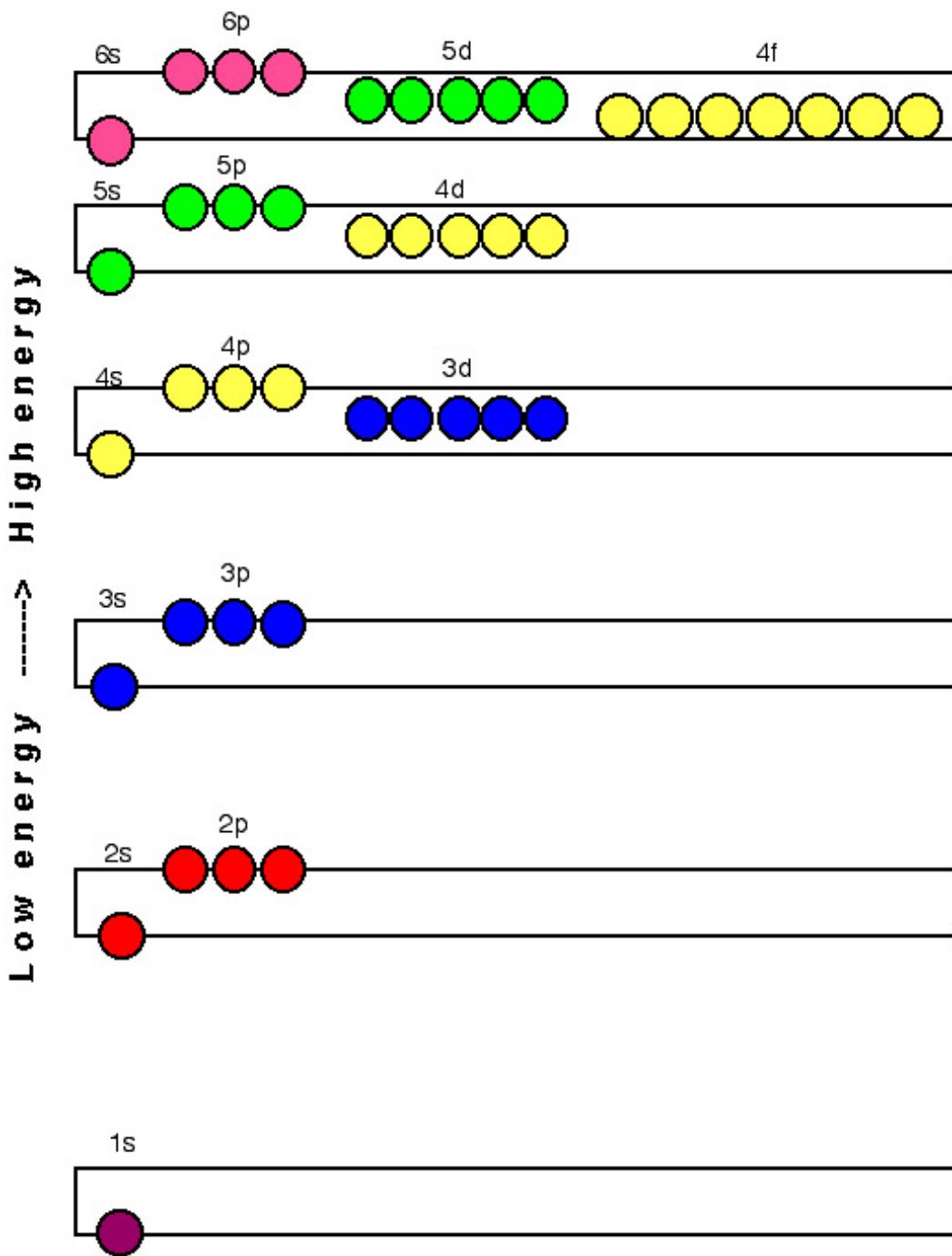
Phosphorus

[Ne]3s²3p³

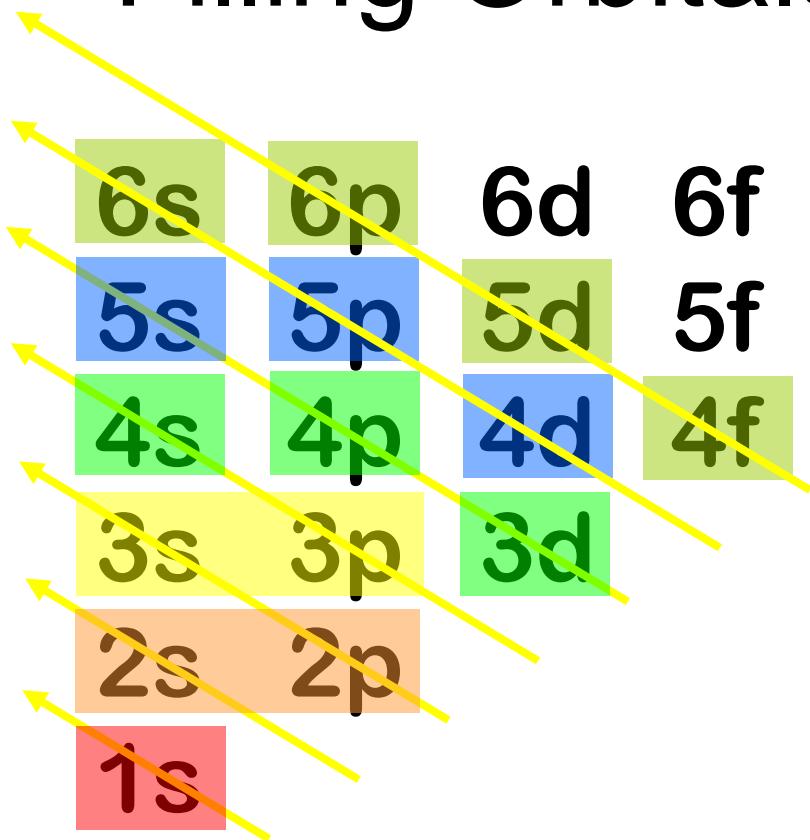
30.97

Electron
Configuration

Energy Levels of the Electrons about their Nuclei



Filling Orbitals



Electrons

2

6

10

14