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Material Science & Engineering International Journal

Review Article

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Comparison of pauling and Ulianov electron distribution models

Abstract

This study presents a comprehensive comparison between the traditional Pauling electron distribution model and the innovative Ulianov model proposed by Dr. Policarpo Yoshin Ulianov. The Pauling model, which relies on the Aufbau principle, Hund's rule, and the Pauli Exclusion Principle, has been a cornerstone in understanding electron configurations within atoms, organizing electrons into s, p, d, and f orbitals. In contrast, the Ulianov model introduces a novel linear progression for electron occupancy, proposing additional orbitals (g and h) to account for electron distribution in a manner that deviates from conventional methodologies. Through an analytical comparison, this paper evaluates both models in terms of functionality, energy levels, and methodology, highlighting the advantages and disadvantages inherent to each. The Pauling model is recognized for its empirical support and wide acceptance, offering a well-established framework for electron configuration. Meanwhile, the Ulianov model provides a fresh perspective that could potentially explain anomalies unaddressed by the Pauling model and predict new chemical properties, despite its current lack of empirical validation. Concluding, while the Pauling model remains the standard for electron configuration, the Ulianov model's innovative approach challenges existing paradigms and invites further investigation into its validity and potential applications in the scientific community.

Volume 8 Issue 2 - 2024

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Received: April 04, 2024 | **Published:** May 27, 2024

Introduction

The organization of electrons around an atomic nucleus is fundamental to understanding chemical properties and behaviors. Traditionally, the Pauling electron distribution[1] model has been widely accepted and used for this purpose. However, Dr. Policarpo Yoshin Ulianov has proposed an alternative model, known as the Ulianov electron distribution model, which prompts a detailed comparison of both methodologies in terms of their approach to electron configuration.

The pauling model

The Pauling model adheres to the Aufbau principle,[2] Hund's rule,[3] and the Pauli exclusion principle[1] to define the order in which electrons fill the available atomic orbitals. Electrons are said to occupy the lowest energy orbitals first before moving to higher energy levels. This model systematically organizes the electrons into s, p, d, and f orbitals, following a specific sequence that corresponds to increasing atomic numbers on the periodic table. Pauling model use 7 electrons layer with four orbitals possibilities:

- Orbital s = contain 1 to 2 electrons
- Orbital p = contain 1 to 6 electrons
- Orbital d = contain 1 to 10 electrons
- Orbital f = contain 1 to 18 electrons

To distribute a certain number of electrons in the orbitals of an atom, it is necessary to use the Pauling diagram, shown in Figure 1, where the lines follow an increasing energy level.

The Ulianov model

The Ulianov Electron Distribution (UED) model has bases in the Ulianov Theory[4] and Ulianov String Theory[5] and Kepler Ulianov Proton Tree (KUPT) model.[6] UED introduces a different perspective in the electrons, assuming that exists a more basic distribution given by the protons distribution in the atomic nucleon defined by the KUPT model and so the electron follows orders from its related protons. UED proposing a linear or alternative progression for electron occupancy, using sevem level related to protons level at KUPT model. This new electron distribution also categorizes electrons into orbitals but follows a unique sequence that deviates from the conventional understanding. The specifics of this model focus on a hypothetical construct where additional orbitals or different filling orders are considered, ostensibly offering a new way to visualize electron distribution.

Ulianov model use seven electrons layer with four orbitals possibilities:

- Orbital s = contain 1 to 2 electrons
- Orbital p = contain 1 to 6 electrons
- Orbital g = contain 1 to 16 electrons (g = p + d)
- Orbital h = contain 1 to 30 electrons (h = p + d + f)

It is important observe that in the Ulianov model of electronic distribution, it is not necessary to create a diagram like the Pauling diagram shown in Figure 1, as it is just a linear sequence of energy levels. So it is enough to jump from one level to another in the correct order, as indicated below.

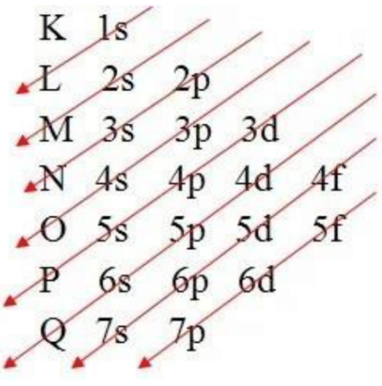

Figure 1 Pauling diagram.

Firstly, the 13 sub-levels in the Ulianov distribution, follows an ascending order of numbers (1 to 7) and letters (s , p , g, h):

1s → 2s → 2p → 3s → 3p → 4s → 4g → 5s → 5g → 6s → 6h → 7s → 7h

Then, just count the electrons within each sub-level, going from 1 to the maximum value of electrons per sub-level: s=2 , p=6 , g = 16, h=30.

In this way, the complete sequence of 118 electrons in the Ulianov distribution model is the follow: $1s^1 \rightarrow 1s^2 \rightarrow 2s^1 \rightarrow 2s^2 \rightarrow 2p^1 \rightarrow 2p^2 \rightarrow 2p^3 \rightarrow 2p^4 \rightarrow 2p^5 \rightarrow 2p^6 \rightarrow 3s^1 \rightarrow 3s^2 \rightarrow 3p^1 \rightarrow 3p^2 \rightarrow$

$3p^3 \rightarrow 3p^4 \rightarrow 3p^5 \rightarrow 3p^6 \rightarrow 4s^1 \rightarrow 4s^2 \rightarrow 4g^1 \rightarrow 4g^2 \rightarrow 4g^3 \rightarrow 4g^4 \rightarrow \ldots \rightarrow 4g^{15} \rightarrow 4g^{16} \rightarrow 5s^1 \rightarrow$

$5s^2 \rightarrow 5g^1 \rightarrow 5g^2 \rightarrow 5g^3 \rightarrow 5g^4 \rightarrow \ldots \rightarrow 5g^{15} \rightarrow 5g^{16} \rightarrow 6s^1 \rightarrow 6s^2 \rightarrow 6h^1 \rightarrow 6h^2 \rightarrow 6h^3 \rightarrow 6h^4 \rightarrow$

$6h^5 \rightarrow \ldots \rightarrow 6h^{29} \rightarrow 6h^{30} \rightarrow 7s^1 \rightarrow 7s^2 \rightarrow 7h^1 \rightarrow 7h^2 \rightarrow 7h^3 \rightarrow 7h^4 \rightarrow \ldots \rightarrow 7h^{29} \rightarrow 7h^{30}$

Note that this sequence is so simple that it is not necessary to draw a diagram to make the right order, which is one of the advantages of the Ulianov electron distribution model. As can be seen in the attached Table 1, the Ulianov distribution, generates a logical sequence and provide one address for each electron that is similar to Pauling's with small differences, making it very easy to go from one distribution to the other based on Table 1 data that can be used as a dictionary between the two distributions models. It is worth noting that this distribution of Ulianov electrons did not arise from nothing. The Ulianov distribution is based on the distribution of protons within the atomic nucleus, in a model called KUPT -Kepler Ulianov Proton Tree. A detail of the KUPT model goes beyond the scope of the current article and will be done in another article currently being written. For information, Figures 2 & 3 show what the proton distribution is like in the KPU model, for eight noble gases.

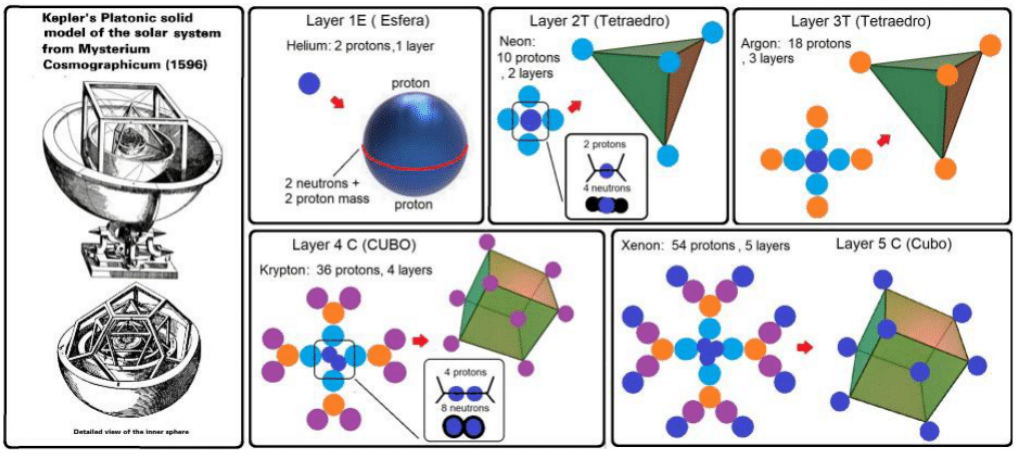

Figure 2 Kepler Platonic solid's nested form grouping, and Kepler Ulianov Proton Tree for Helium, Neon, Argon, Krypton and Xenon. Each colored sphere represents two protons forming a UPB (Ulianov Proton Burger).The colors were used for ease of viewing only and have no real meaning.

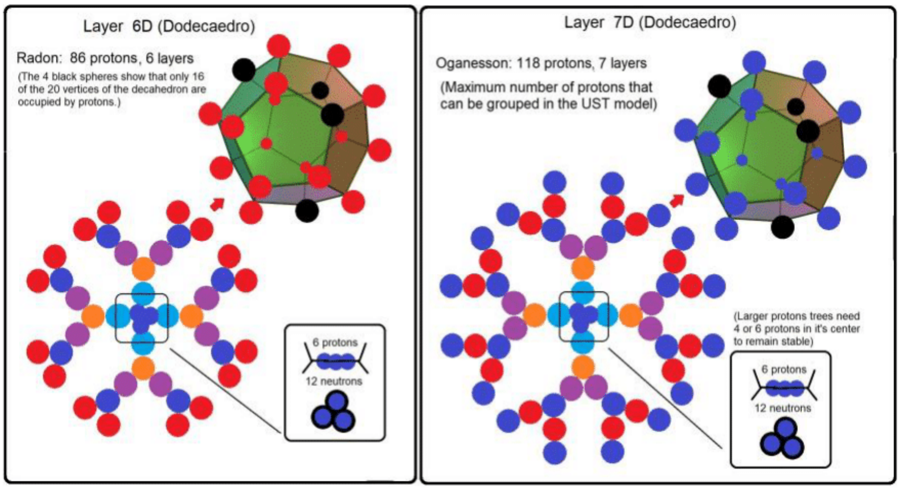

Figure 3 Kepler Ulianov Proton Tree for Radon and Oganesson, note that Oganesson KUPT are full load and has 59 spheres, representing 118 protons that are the maximum number of protons that the KUPT tree can contain, which by "coincidence" is the largest number of protons observed in a chemical element in nature - The own Oganesson.

Analysis and comparison

To compare the Ulianov distribution model with Pauling distribution model, we can make an analogy, envisioning a hotel with rooms situated along a spiraling ramp that gently ascends, the room numbers increase steadily both in terms of floor and room number as one ascends the ramp. So we need define a label for each room composed by the floor number and room position in the floor. The Ulianov distribution give a label that reflects a continuous and orderly progression, where both the floor and room numbers increase in a linear and predictable fashion, mirroring the sequential addition of electrons in ascending energy levels in the atom electro sphere. Conversely, in the Pauling distribution model, the rooms are also aligned according to their energy levels on the ramp, but the floor numbering system jumps erratically up and down. This means that while each room has a unique double-digit designation (floor and room number) similar to its position in the Ulianov model, the Pauling model requires a complex diagram or table, as presented in Figure 1, to navigate from one room to the next room to get a sequence, because of the non-linear floor numbering in the rooms in the Palings "hotel". Thus, although both systems ultimately address the same sequential order of rooms based on their position on the ramp (or energy level), the Ulianov model does so in a straightforward, sequential manner, while the Pauling model employs a more complex, non-sequential approach to room numbering. Note that in this analogy, with respect to the most basic function, which is to give a different number for each room in the hotel, the two numbering systems basically do the same thing and therefore both can be considered valid and capable of implementation. This aspect can be easily observed in table one where the two distributions are presented for each chemical element.

Functionality: Both the Pauling and Ulianov models serve the primary function of addressing electrons in their respective orbitals around the nucleus. They provide a structured method to understand the electron configuration within atoms.

Energy levels: In the Pauling model, energy levels increase predictably as one moves through the periodic table, with electrons filling lower energy orbitals before those of higher energy. The Ulianov model, while differing in its approach, ostensibly adheres to a principle where energy levels also increase, albeit through a different sequence or inclusion of hypothetical orbitals.

Methodology

The principal difference lies in the methodology of determining the electron filling order. The Pauling model is based on empirical observations and quantum mechanics principles, making it widely accepted in the scientific community. The Ulianov model, however, introduces an alternative method that might not align with current empirical data but offers a theoretical perspective on electron distribution because is based on the protons adding to the atomic nucleon as defined in the Kepler Ulianov Proton Tree presented in Figures 2 & 3. This KPUT model proposes that protons are connected one by one in the atomic nucleus and form a rigid structure in the form of a symmetrical tree with four main branches that divide into two (forming eight branches) and then divide into two again (forming 16 branches). As each KUPT branch is composed of a sequence of UPPBs (Ulianov Proton Pogo Ball) and each UPPB has two protons, this model generates seven levels, with a maximum total of: 2, 8, 8, 16, 16, 32 and 32 protons per level.

In turn, each proton is related to an electron that is added to the electrosphere in a more flexible way and, in addition, each electron also follows the configuration of the proton it is a partner with. As the protons grown the KUPT tree adding new levels of new branches, it's electrons partners, encapsulating all the electrons that were already contained in the previous atoms electrospheres, like a Russian doll scheme. Thus, considering the maximum number of protons per KUPT level, this represents sums of proton (and its partners electrons) in seven levels:

- **Level K:** $1s^2 = 2$ protons (associated with 2 electrons);
- **Level L:** $2s^2+2p^6 = 8$ protons (associated with 8 electrons);
- **Level M:** $3s^2+3p^6 = 8$ protons (associated with 8 electrons);
- **Level N:** $4g^{1}6 = 16$ protons (associated with 16 electrons);
- **Level O:** $5g^{1}6 = 16$ protons (associated with 16 electrons);
- **Level P:** $6s^2 + 6h^{3}0 = 32$ protons (associated with 32 electrons);
- **Level Q:** $7s^2 + 7h^{3}0 = 32$ protons (associated with 32 electrons).

Observation: The protons in levels 4s and 5s are added to the root of the KUPT tree, but its electrons partners go to the outside of the electrosphere forming the 4s2 end 5s2 electrons sub-levels. Note that this association of proton and electrons automatically guarantees an increasing level of energy for the protons and also for the electrons. This can be observed in practice through Table 1, where, as known, the Pauling distribution folows a growing energy level, and in it turn, the Ulianov-associated distribution, as can be easily observed also following an increasing lever of energy.

Table 1 Electronic distribution of elements

Num	Element	Pauling distribution	Ulianov distribution
1	Hydrogen	$1s^1$	$1s^1$
2	Helium	$1s^2$	$1s^2$
3	Lithium	$1s^2, 2s^1$	$1s^2, 2s^1$
4	Beryllium	$1s^2, 2s^2$	$1s^2, 2s^2$
5	Boron	$1s^2, 2s^2, 2p^1$	$1s^2, 2s^2, 2p^1$
6	Carbon	$1s^2, 2s^2, 2p^2$	$1s^2, 2s^2, 2p^2$
7	Nitrogen	$1s^2, 2s^2, 2p^3$	$1s^2, 2s^2, 2p^3$
8	Oxygen	$1s^2, 2s^2, 2p^4$	$1s^2, 2s^2, 2p^4$
9	Fluorine	$1s^2, 2s^2, 2p^5$	$1s^2, 2s^2, 2p^5$
10	Neon	$1s^2, 2s^2, 2p^6$	$1s^2, 2s^2, 2p^6$
11	Sodium	$1s^2, 2s^2, 2p^6, 3s^1$	$1s^2, 2s^2, 2p^6, 3s^1$
12	Magnesium	$1s^2, 2s^2, 2p^6, 3s^2$	$1s^2, 2s^2, 2p^6, 3s^2$
13	Aluminum	$1s^2, 2s^2, 2p^6, 3s^2, 3p^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^1$
14	Silicon	$1s^2, 2s^2, 2p^6, 3s^2, 3p^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^2$
15	Phosphorus	$1s^2, 2s^2, 2p^6, 3s^2, 3p^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^3$
16	Sulfur	$1s^2, 2s^2, 2p^6, 3s^2, 3p^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^4$

Table 1 Continued...

Num	Element	Pauling distribution	Ulianov distribution
17	Chlorine	$1s^2, 2s^2, 2p^6, 3s^2, 3p^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^5$
18	Argon	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6$
19	Potassium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1$
20	Calcium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2$
21	Scandium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^1$
22	Titanium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^2$
23	Vanadium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^3$
24	Chromium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^4$
25	Manganese	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^5$
26	Iron	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^6$
27	Cobalt	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^7$
28	Nickel	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^8$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^8$
29	Copper	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^9$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^9$
30	Zinc	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{10}$
31	Gallium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{11}$
32	Germanium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{12}$
33	Arsenic	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{13}$
34	Selenium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{14}$
35	Bromine	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{15}$
36	Krypton	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}$
37	Rubidium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^1$
38	Strontium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2$
39	Yttrium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^1$
40	Zirconium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^2$
41	Niobium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^3$
42	Molybdenum	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^4$
43	Technetium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^5$
44	Ruthenium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^6$
45	Rhodium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^7$
46	Palladium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^8$
47	Silver	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^9$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^9$
48	Cadmium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10s}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{10}$
49	Indium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{11}$
50	Tin	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{12}$
51	Antimony	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{13}$
52	Tellurium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{14}$
53	Iodine	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{15}$
54	Xenon	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16}$
55	Cesium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^1$
56	Barium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2$
57	Lanthanum	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^1$
58	Cerium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^2$
59	Praseodymium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^3$
60	Neodymium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^4$
61	Promethium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^5$
62	Samarium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^6$
63	Europium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^7$
64	Gadolinium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^8$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^8$
65	Terbium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^9$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^9$
66	Dysprosium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{10}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{10}$
67	Holmium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{11}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{11}$
68	Erbium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{12}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{12}$
69	Thulium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{13}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{13}$
70	Ytterbium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{14}$
71	Lutetium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{15}$

Citation: Ulianov PY. Comparison of pauling and Ulianov electron distribution models. *Material Sci & Eng.* 2024;8(2):49–54. DOI: 10.15406/mseij.2024.08.00235

Table 1 Continued...

Num	Element	Pauling distribution	Ulianov distribution
72	Hafnium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{16}$
73	Tantalum	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{17}$
74	Tungsten	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{18}$
75	Rhenium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{19}$
76	Osmium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{20}$
77	Iridium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{21}$
78	Platinum	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^8$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{22}$
79	Gold	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^9$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{23}$
80	Mercury	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{24}$
81	Thallium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{25}$
82	Lead	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{26}$
83	Bismuth	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{27}$
84	Polonium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{28}$
85	Astatine	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{29}$
86	Radon	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}$
87	Francium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^1$
88	Radium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2$
89	Actinium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^1$
90	Thorium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^2$
91	Protactinium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^3$
92	Uranium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^4$
93	Neptunium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^5$
94	Plutonium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^6$
95	Americium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^7$
96	Curium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^8$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^8$
97	Berkelium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^9$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^9$
98	Californium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{10}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{10}$
99	Einsteinium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{11}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{11}$
100	Fermium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{12}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{12}$
101	Mendelevium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{13}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{13}$
102	Nobelium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{14}$
103	Lawrencium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{15}$
104	Rutherfordium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{16}$
105	Dubnium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{17}$
106	Seaborgium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{18}$
107	Bohrium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{19}$
108	Hassium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{20}$
109	Meitnerium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^7$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{21}$
110	Darmstadtium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^8$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{22}$
111	Roentgenium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^9$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{23}$
112	Copernicium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{24}$
113	Nihonium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^1$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{25}$
114	Flerovium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^2$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{26}$
115	Moscovium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^3$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{27}$
116	Livermorium	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^4$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{28}$
117	Tennessine	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^5$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{29}$
118	Oganesson	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^6$	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4g^{16}, 5s^2, 5g^{16},6s^2, 6h^{30}, 7s^2, 7h^{30}$
119	To be found	$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2,4d^{10}, 5p^6, 6s^2, 4f^{14}, 5d^{10}, 6p^6, 7s^2, 5f^{14},6d^{10}, 7p^6, 7d^1$	Electron cannot be placed Need $8s^1$ orbital that is not available

Advantages and disadvantages

Pauling model

Advantages: Well-established, supported by experimental data, and widely taught, making it universally understood among chemists and physicists.

Disadvantages: While highly accurate for many elements, anomalies in electron configurations can occur (e.g., transition metals) that the model does not intuitively predict. It follows an order that jumps from one orbital to another, requiring a diagram to determine the order of increasing energy. It allows the existence of atoms heavier than Oganesson.

Citation: Ulianov PY. Comparison of pauling and Ulianov electron distribution models. *Material Sci & Eng.* 2024;8(2):49–54. DOI: 10.15406/mseij.2024.08.00235

Ulianov model

Advantages: Offers a novel perspective that could potentially explain phenomena not covered by the Pauling model or predict new chemical properties. It's represent a new way to see metallic connections between iron atoms and others metallic elements. Naturally predict the eighth noble gasses and also predict that Oganesson is the last element. It follows an increasing order of orbital distribution associated with an increasing order of energy, making it easier to fill out the electron diagram and know the right order to follow with no need of diagrams like the Pauling diagram presented in Figure 1. So for educational proposes the Ulianov electron distribution represent a great advantage over the Pauling distribution, as the Ulianov distribution can be taught in a few minutes, while the Pauling distribution takes several hours to be teached and still depends on the students having the diagram Table shown in Figure 1 at hand, and know how to use it correctly.

Disadvantages: Lacks empirical support and may not be easily integrated into the existing framework of chemical research without substantial evidence, for example that that Kepler Ulianov Proton Tree in fact represent the way that protons are disposed in the atom nucleons.

Conclusion

In comparing the Pauling and Ulianov electron distribution models, it's clear that both aim to fulfill the same fundamental goal of electron configuration description. While the Pauling model remains the standard due to its empirical validation and theoretical foundation, the Ulianov model presents an intriguing alternative that challenges conventional thinking. Further investigation and validation are required to ascertain its practicality and accuracy, underscoring the dynamic nature of scientific inquiry and the ever evolving understanding of atomic structure.

Acknowledgments

None.

Conflicts of interest

The authors declare that there is no conflicts of interest.

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Citation: Ulianov PY. Comparison of pauling and Ulianov electron distribution models. *Material Sci & Eng.* 2024;8(2):49–54. DOI: 10.15406/mseij.2024.08.00235