Abstract:

In the first two papers on energy fields, we examined the basic principles for the interactions between energy fields, and analyzed the nature of potential, orbital and rotational energy fields. Here we apply those basic principles to nuclear physics and make further proposals. The results may provide an alternative explanation for the forces at the sub-atomic level, and an alternative explanation for the existence of allotropes - the different forms of an element.

1. Introduction:

Simple physics experiments have been conducted over the centuries and elaborate theories have been proposed to explain the observations (e.g. magnetic and electromagnetic theories). These theories have become dominant and, in the modern era, they generally go unchallenged. This paper re-examines some fundamental aspects of physical behavior and proposes alternative explanations for the interactions in nature.

For this paper, we have developed proposals for more complex interactions between energy fields. It builds on the findings of three earlier papers [1][2][3] where energy fields are seen to interact with each other, and to turn or move, if free to do so. Energy fields are seen to move to positions of lower net field strength, which are also the configurations for lower total energy.

In this paper, we have analyzed the interactions between rotational energy fields and applied the basic principles to the construction of the atomic nucleus, considering the apparent symmetry and stability of atoms with even-numbered nucleons.

Note: From earlier analysis of the structure of the atom [4], there was no mathematical pattern for electron ionization energies in relation to the supposed number of neutrons in the atom. This suggests that neutrons – whatever their properties - do not reside in the nucleus, where their mass would contribute to the nature of the nuclear Potential Energy Well.

In this scenario, the effect of the potential energy field is assumed to be small, and the effect of the orbital energy field is assumed to be zero.
2. Groups of adjacent particles:

With reference to the earlier papers on Energy Fields [1][2][3], we have taken the principle that pairs of particles with parallel energy fields will be in a minimum energy position, and therefore in stable equilibrium, when in an end-to-end configuration.

We have also taken the principle that pairs of particles with anti-parallel field vectors will be in a minimum energy position, and therefore in stable equilibrium, when in a side-by-side configuration – see Figure 2a:

Note: It is assumed that, for groups of protons in an atomic nucleus, the rotational energy field vectors may be in random directions. For such a group of particles, it is assumed that the minimum energy level will be when pairs of particles have exactly parallel or exactly anti-parallel field vectors. For simplicity, this paper will consider these scenarios only.

![Figure 2a: Configurations for two protons.](image)

For a number of particles grouped together - protons in a nucleus for example - it is proposed that there will be a number of stable configurations. The different configurations will have different total energy levels which will determine the level of stability and also the probability of that configuration occurring.

Furthermore, it is proposed that the most stable configuration for the protons will be the lowest net energy configuration.

It is proposed that larger groups of protons will be configured in a number of different ways, dependent on their rotational energy field vectors. The following diagrams will show the simplest solutions when the energy fields are parallel or anti-parallel.
For three protons in a nucleus (Lithium) there will be three main configurations – vertical, horizontal and asymmetric - see Figure 2b:

Figure 2b: Some configurations for three protons (Lithium).

The net energy field surrounding the group of particles will be symmetric or asymmetric, depending on the shape of the configuration. The asymmetry of the net energy field will determine the dipole and multipole aspects of the energy field surrounding the nucleus.

For a group of protons in a nucleus, we propose that the shape of the net energy field will affect the nature of the surrounding electrons. The shape of the net energy field will also affect the characteristics of that elemental atom.

We propose that the different configurations for the protons in a nucleus will create different characteristics for that element. This will create different ALLOTROPES for that element.

For Lithium, there are three protons in the nucleus, but there are no allotropes, suggesting that one configuration is dominant - presumably the one with the lowest total energy.

For Beryllium, there are four protons in the nucleus. There will be several possible configurations for the protons - vertical, horizontal, asymmetric and cuboid - see Figure 2c: (with protons shown as magnets)
Beryllium has no allotropes, suggesting that one configuration is dominant. We propose that the dominant configuration will be a symmetrical configuration, the one with the lowest total energy.

For Boron, there are five protons in the nucleus. There will be a number of configurations – vertical, horizontal and asymmetric. Boron has many allotropes, both crystalline and amorphous, suggesting that a number of different proton configurations co-exist, all with similar total energy – see Figure 2d:

For Carbon, there are six protons in the nucleus. There are many possible configurations for the protons, some of which are shown in the diagram.
The different configurations may explain the many allotropes of Carbon, including diamond, graphite and graphene – see Figure 2e:

Figure 2e: Some configurations for six protons (Carbon).

Oxygen, with eight protons in the nucleus, has many configurations. We propose that the more symmetric configurations will have the lowest total energy and will, therefore, be dominant. Oxygen has a number of allotropes - see Figure 2f:

Figure 2f: Some configurations for eight protons (Oxygen).
Neon, with ten protons in the nucleus, is an inert gas. It has no allotropes, suggesting its nucleus, when symmetric, is at the lowest total energy level. We propose that the most symmetric configuration for ten protons will be as five pairs – see Figure 2g:

**Figure 2g:** Symmetric configuration for ten protons (Neon).

Sulfur has sixteen protons which can be arranged in many configurations, but none result in a perfectly symmetric total energy field. As a result, Sulfur has a large number of asymmetric configurations. It also has the most allotropes of any element – see Figure 2h:

**Figure 2h:** Some configurations for sixteen protons (Sulfur).
Argon, with eighteen protons in the nucleus, is an inert gas. It has no allotropes, suggesting its nucleus is symmetric and the energy field around the nucleus is uniform. We propose that the most symmetric configuration for eighteen protons will be as nine pairs – see Figure 2i:

![Argon-18-protons](image)

**Figure 2i:** Symmetric configuration for eighteen protons (Argon).

For the elements of the Periodic Table with more protons, we propose that the net energy level of the nucleus will be a minimum when the nucleus is most symmetric. With these configurations, the total energy field around the nucleus will also be the most symmetric and uniform. For the inert elements – the noble gases – there is a pattern for the configurations:

<table>
<thead>
<tr>
<th>Element</th>
<th>Protons</th>
<th>Pairs</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helium</td>
<td>2</td>
<td>1 pair</td>
<td>2</td>
</tr>
<tr>
<td>Neon</td>
<td>10</td>
<td>5 pairs</td>
<td>5x2</td>
</tr>
<tr>
<td>Argon</td>
<td>18</td>
<td>9 pairs</td>
<td>3x3, 3x3</td>
</tr>
<tr>
<td>Xenon</td>
<td>36</td>
<td>18 pairs</td>
<td>3x3, 3x3, 3x3, 3x3</td>
</tr>
<tr>
<td>Kryton</td>
<td>54</td>
<td>27 pairs</td>
<td>3x3, 3x3, 3x3, 3x3, 3x3, 3x3, 3x3</td>
</tr>
<tr>
<td>Radon</td>
<td>86</td>
<td>43 pairs</td>
<td>3x3, 3x3, 5x5, 5x5, 3x3, 3x3, 3x3</td>
</tr>
<tr>
<td>Oganesson</td>
<td>118</td>
<td>59 pairs</td>
<td>3x3, 5x5, 5x5, 5x5, 3x3, 3x3, 3x3</td>
</tr>
</tbody>
</table>
These nuclei have configurations that are symmetric and with fewest allotropes. From earlier analysis of the structure of the atom [4], we have seen that for the electrons surrounding a nucleus, the energy levels to remove an outer electron (ionization potentials) are seen to be higher for symmetric atoms – those with symmetric nucleii – see Figure 2k:
3. Summary and Conclusions

In this paper, we have analyzed advanced interactions between energy fields and proposed the nature of these interactions at the sub-atomic scale.

We have not used any historic physics theories involving concepts that cannot be observed. The proposals for the interaction of energy fields are not dependent on the old physics theory of “charge” and “magical orbits”.

The strengths of energy fields appear to vary by orders of magnitude, yet the sizes and distances between bodies can also vary by orders of magnitude. Whilst one or other energy field may appear to dominate, it does not mean that other energy fields are not present, at lower strengths.

Within the atom, the orbital and rotational energy fields may be strongest and temperature dependent, whilst the potential (gravitational) energy field may be insignificant.

These results may provide an alternative explanation for the “conventional” forces at the sub-atomic level, and an explanation for the existence of allotropes.

Further information available on Blog: https://edisconstant.wordpress.com/

4. References:


Copyright © 2019  Brian Strom. All rights reserved.