The Strong Force Project

A Concise Clarification

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as referenced from Henry Semat
and Harvey White's
Atomic Age Physics 1959

This document contains much sought after information
on the nature of the inner atom particularly the nucleus
and the forces which govern it. It is theoretical disclosure.

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1st Chapter

Electrons and the Atom

This article will try to make the physics of the atomic even simpler, as simple as possible, without sacrificing detail. To start I believe another versed author Isacc Asimov made the best opening for any book on the atom by beginning with the sand pile experiment. Briefly put, where one piles sand grains on a table and separated the pile by halves with some sort of flat object like a square plate. In doing so we could use this technique to explain basic atomic physics not only to laymen but even hypothetical natives in a first contact scenario.

After separating the first pile we continue to do so pushing away one pile and continuing separating the remaining. Eventually and very quickly we get down to the single grain of sand. Well what then do we do? Is this the smallest particle? Of course we know it is not. We take the edge of the metal plate and crush the sand grain until it is fine powder. Well now we have another pile. Then we take a very small thing like straight razor and separate the tiny powder pile as we did the larger fully granuled pile. Eventually we will again get down to a single grain of dust power. We with tedium and a sharp eye we could probably crush the miniscule powder grain into another ever-powdery pile and then repeat the separation process. The question then that arises, which should probably thankfully interrupt the tedium, how many times can we do this? Will we eventually come down to a tiniest particle? Well the answer as we know today is yes and no. Yes in that we will get down to a smallest particle. But as we get smaller and smaller we notice that the powdery sand granules start sticking together in clusters instead of loosely sitting atop and around one another. These clusters we call molecules. Well if we had small enough tweezers we might be able to separate the sticky clusters. So we do. At this time we have a few pieces of the cluster sitting before us. Then we look closer at them and find that the pieces are still composed themselves of sticky particles we call atoms. We find some even smaller tweezers and try to separate the particles taking note that they possess a force between themselves and adjacent atoms. After moving aside the other piles we now have a smallest particle. The Atom.

And so as curiosity drives us we yet still zoom in to see if this atom is composed of something and we find that it is. There are little forces acting between them which we see makes them move in circles around a nugget in the center. The particles moving around in circle are called electrons and the nugget in the center is called the nucleus. The electrons are attracted to the nucleus by the force called **electromagnetism** but they never seem to reach the nucleus due to a debated means. Some say, as originally theorized, that it is centrifugal, the weight, of the **electron** that keeps it from burying itself in the center nugget. Yet others as does myself theorize that the electron is far too small to have enough weight to keep it in orbit against the strong pull of electromagnetism and there then must be an opposite nature. The electron is not pulling away as does a planet in orbit about a star but held in place by gravity, but it is constantly trying to reach the nugget nucleus and is sitting on a frictionless sphere thereby causing it to constantly move about in circles and summersaults. We know plenty about the previous view of centrifugal orbital and much study and mathematics have been applied as can be seen by Enrico Fermi and Paul Dirac's extensive electron distribution tables. However if the adjacent theory is correct about inverted **centrifigulism** then what is the frictionless sphere, which keeps the electron moving in circles? First we should examine the nugget, the nucleus.

We have come al long way in the separation experiment which started from a pile of sand and ended at a small particle composed of little points of matter that are attracted by a force acting on one another. Well after looking long and close at the electron, the small ones going around the center nugget we find that it is only a single particle, as far as current scientists have revealed. We thought the nugget was just a big particle in the center yet find it to be another cluster of fatter particles that the electron which is puny by comparison as politely as we can put it not wanting to offend the poor little electron. Let's just take our tweezers and pick off one of the nuggets in the center. We cannot because it seems that it is really stuck on there. The nugget in the center, its glued on particles are so tight that they seem immovable even with a tight squeeze on the little ball. A good yank and the tweezers only slip off. Well there are only four balls stuck together. But they are very strongly bonded. We should find another way.

If we go back to the previous piles of particles me can come across an atom with a bigger nucleus. There are more balls stuck together therefore we should be able to get a better grip. We do. With a sharp pull the nugget is split in two! But something

interesting happened. When the nugget split in two there was a flash of light and heat, which seemed to come out from in between the tiny balls. If was as if there was light trapped inside which cannot be seen until one tears the nucleus apart and it escapes. We're tired now and would prefer for this granule separation to end so we can finalize our observation. Yet, we note that for these tiny balls of matter we call **nucleons**, chunks of the nucleus, there must be some way it is held together just as we noted the circling electron to be held in place by that electromagnetic force exchanging between the electron and the nucleus. But the nucleons are to tightly held together that we cannot tell what is holding them together.

Lets dig around in the pile again and pull out an atom with just two nucleons in the nugget with one orbiting electron. This way we might be able to look closely and see what is holding them together. We do. To our weariness we find again that even the nuggets nucleons are yet a cluster of smaller particles, **quarks**. With another yank we separate the two nucleons and another interesting thing happens. The electron continues to orbit only of the nucleons and when we put the other close by the electron doesn't attract to it. We would at least expect it to disturb the orbit somewhat like putting two magnets close to one another. We deduce that the nucleon with the orbiting electron, though similar in size is the one carrying a **positive charge** and the electron a **negative** accounting for the attraction and the other nucleon is neutral. The positive nucleon we call a **proton** and the neutral one naturally a **neutron**.

The Proton and the Neutron

We have gathered enough variables now to form a set or ideas that lead to a working theory. The proton is positively charged and attracts an electron, which never can seem to reach it. The neutron is neutral and cannot attract the electron but is able to strongly bind to the proton. Also we have noticed that the neutron every so often is magnetic! But if a neutral particle is indeed neutral how could it be at all magnetic?

Sure enough the proton and neutron consists of three quarks, which are themselves bonded to one another making the nucleon. We discover that the quarks also have a kind of attractive force holding them together but it is not electromagnetism it is something else. And since it is so strong we call it the **strong force**.

The Strong force

So the quarks are attracted to one another and form a nucleon. The three quarks we find to our intrigue are of **fractional charges**, meaning not just positive and negative but one of either 1/3 positive, 1/3 negative, 2/3 positive, or 2/3 negative. So to make a proton there is two +2/3 quarks and one –1/3 quark. For the neutron there is two –1/3 and one +2/3. Interesting to say the least.

With this discovery we can now see how those three variables fall into position. As Follows: Two +2/3 quarks and one –1/3 quark make a single positive proton with attracts a single negative electron. The electron cannot reach the proton or nucleus depending on the **atomic number**, because of the –1/3 or –2/3 quarks in place, but is still held close by the + 2/3 or quarks, a type of stalemate between positive and negative, the frictionless sphere, *hence the exclusion principle.* Regarding the neutron not attracting the electron but **bindable** to the proton it is the –1/3 or –2/3 quarks in the neutral neutron that attracts to the +2/3 quarks in the proton and vice versa. As for the **magnetic moment** of the neutron it would seem to be a random, perhaps evenly **intervaled**, *fluxuation in the quark fractional charge, rotation balance.* Below is a the quark chart.

SANTORA'S MODERN QUARK CHART

Greetings. One of my favorite scientists, Richard P. Feynman, author of *Quantum Electrodynamics* and other published works as well as lecturer on the phenomena of light and material interaction, has notably expressed a desire for a more interesting chart for naming quarks and their attributes and is quoted to have disliked the traditional names such as, "up", "down", "charm", and "truth". I took it upon myself to try and make one and here it is below. Perhaps this would appease Mr. Feynman and other esteemed colleagues as a more sciency table for naming quarks.

alpha	a+	+2/3	alphaposi	1.0 MeV
	a-	-1/3	alphanega	3.0 Mev
beta	b1-	-1/3	betanega1	102 MeV
	b2-	-2/3	betanega2	1530 MeV
gamma	g+	+2/3	gammaposi	176000 MeV
	g-	-1/3	gammanega	4700 MeV
delta				
			Brandon Santora	www.starcityhistory.com
type:	symbol	charge	quark	mass

Remember the stalemate between positive and negative thereby keeping the electrons in an ***allotted orbital zone****?* This zone being a kind if tight space where energies and charges and motions and kinetics might, in togetherness, relate essentially to the exclusion principal in that the spaces and orbital in acknowledgment with other variables, such as energies and masses, are what may be effecting the placements of electrons and why no 4 can exists on the same energy level or orbital zone. Also this series of orbital zones might end somewhere above the nucleus where another zone exists that if an electron were to be forced into it would slow or cease its motions according to its electromagnetic attraction vs. repulsions of negative quarks. This could relate to electron degeneracy pressure seen in collapsed stars. The quark charge rotations may also be what keeps the electron in motion additional to the frictionless sphere 'slippage' as it wants to get into the positive quarks but is always prevented by negative quarks, yet how can positive and negative quarks exists so closely together; quark charge rotation. Could there be built some kind of gyrodyne machine that operates analogously?

Conclusionarily, the nagging questions, what is the energy released in fission and fusion and what is the strong force? It would seem the energy released in fission and fusion would be whatever that stuff is that rotates between quarks, electromagnetic force powers. Even in large nuclei we would like to think that the quark charge rotations do so not only between 3 quarks in one **baryon**, but in the quarks of other baryons, a closed loop spree of quark energy rotations. When a heavy nucleus is split the quark electromagnetic power rotation routine is interrupted and outburst. The strong force seems to be simply *a closed loop dynamically cycling electromagnetic power spree amongst all quarks in a nucleus.*

2nd Chapter

Types of Atoms

So we can see with this theory a basic line of thinking about the atom. From the time we started with the sand pile to the smallest know particle, the quark, it doesn't seem necessary to think any smaller. Only as far as we can verify and if what we know explains most everything we need knot try to break apart a quark. Therefore we shall follow up with this second chapter by talking about the different types of atoms and some of the known effects of interactions, behaviors, and natures of them. Before we used small atoms such as the one with the single proton in the nucleus and one electron in orbit. This is the element **hydrogen**, which is gaseous. Also we mentioned one atom with two baryons in the nucleus, but one was a proton and the other was a neutron both very similar in nature and mass, with one electron in orbit. This one is hydrogen also but what is called an **isotope**, an atomic element with additional neutrons. When there is an element with additional neutrons we no longer refer to it as the original name. For an isotope of hydrogen, with one additional neutron we call **deuterium**. If it had two extra neutrons we call it **tritium**, also the nucleus changes. For deuterium if the electron is removed it is no longer deuterium but becomes a deuteron, just as with hydrogen, by removing the electron it no longer is referred to as hydrogen but no simply a proton; for **tritium**, a **triton**. Now a brief mention about adding or removing electrons is needed. It is natural because we just talked about adding and removing the baryons in the center, protons and neutrons. In an atom if you add or remove electron they become

ions. There are two types of ions positive and negative. Adding an electron to an atom makes it become a negative electron because there are two electrons and one proton in the center. The negative electric charge becomes -2 and the positive charge remains at +1. Before adding the electron the entire charge of the atom was 0. After adding it becomes –1. It is now a negatively charged ion. If in the element that has two protons and two neutrons, **helium**, which supports 2 electrons, by removing one electron the entire charge of the atom becomes +1 and it is now a positively charged ion.

Electricity and Electron Motion

Even before modern times where we actually had the ability to do efficient experiments to confirm or deny our theories on the existence and behaviors of these particles we were aware of these things in phenomena such as thunder and lightening. So far we've been talking about single atoms. But now we will look at collections of atoms such as what we started with originally in a sand pile. If we have a series of atoms say made of copper, an element whose nucleus contains 29 protons and 35 neutrons, we will have in each closely space atom 29 electrons. This is a **solid**. The shape of the solid series of atoms will be a wire. If we want some of the electrons on the outer orbits in each atom to move, called **valence electrons**, we must create a **potential difference** between one side of the wire and the other. This is called **voltage**. To make electrons move along the wire is to establish a **circuit**. If lightening were to contact the wire electrons will travel through the wire at the outer **atomic shells**. If we want to create our own source of electricity to travel through the wire we need to make a **battery**. The battery can be made of an **electrically conductive** element such as **lithium**. Lithium is a metal with valence electrons that are easily moved from one atom to another therefore making the element a good electrical source once charged. On the battery two **terminals** are placed connected to the lithium mass. One terminal is connected to the wire and so is the other. One terminal is called positive and the other negative since it relates to the direction the **current** of electrons will flow. A lithium battery is more like an electrical capacitor which gets it's electricity by being charged or filled with electrons from an external source. A more naturally functioning battery is a chemical cell battery, which is more relatable in function to the generation of electricity in air as lightening. For a chemical cell battery we simply have a container with a chemical solution that created negatively charged ions due to the nature of the liquid elements in the mixture. Dipped into both solutions are metallic plates, which are themselves, bridged by the exposed copper wire we started with. By mixing them it makes ions on one of the chemicals. Now we have an electrical source. Then we put another container with a different kind of solution and bridge between them. The bridge is made of a material that happens to be deficient in electrons or was made deficient by another means. Therefore the electron *efficient* solution in the liquid in the first container is naturally going to push the extra electrons of the ionized liquid across the bridge into the second solution. The metal plate made of zinc then pulls the extra electrons out of the second solution and into a wire, a narrow proceeding of the zinc plate, which connects to the copper wire (both are electrically conductive) and leads back to the plate in the first solution which is a widened extension of the copper wire. This example of difference of potential was created by the ionized chemical elements, which resulted in the current needed to make electricity travel across the copper wire making a full circuit. With the lithium metal battery which is a dry battery not including any liquid chemical solutions a difference of potential needs to be created between the lithium mass the terminals and the object that needs the electricity, the **resistor**, to get the electrons out of the lithium. With lightening We have something similar to this chemical battery: A cloud of water vapor, which can contain many other elements, salts, sulfur, chlorine, potassium and so on. The circuit in this case is the air, which is analogous to the wire. Then we have the ground which contains it's own plethora of elements. So we have a similar situation happening, the cloud vapor mixture creates ions, the air channels the electric spark, and the ground accepts the transfer like the battery. To make artificial lightening, which is good for experiment; we can make a glass **discharge tube**. It is simply a closed cylinder of glass containing a certain gas or gas compound representing air. Then like in a battery the electrodes are embedded in each end of the glass and exposed inside. A battery supplies the electricity and lightening is seen in the discharge tube. The glow of the lightening is called **light**.

Light

In the electrical discharge that we have observed just now we saw that it is the movement of electron streams between two potentialized regions, in this case an ionized substance and another oppositely ionized substance such as a liquid to a transferring medium or cloud to the ground. Both were conditioned so that the movement of electrons can be constituted. Yet if

electrons are so small how are we able to know that they are moving from one point to another? Well, in a battery we can tell because in the wet cell experiment there would normally be an amphometer or some other measuring mechanism to tell us how much and how many electrons and voltage is passing; that and perhaps one might get a pretty nice jolt from making contact with the copper wire. There is another way to detect electrons. Not by how they move a motor or cause a needle to sway, or even how bad a good shock stings, but by the light they produce. We have covered only a basic activity of sub atomic particles as they orbit a nucleus. So what then is happening in a lightening bolt or perhaps a light bulb filament? What make them glow so brightly? It is the combination of circular motion with inward motion of the electron in its orbit. What happens when an electron moves in toward the nucleus? Well it isn't easy. We recall that there is repulsion there from alpha, beta, and gammanega quarks making it difficult. But since the –nega quarks are only a fractional charge there is not sheer stiffness we would expect. Two likely charged objects very strongly repel one another. And this is not referring to two like magnets. The repulsion between two protons or two electrons should be greater that we would see in two macroscopically sized magnetic objects like a classic bar magnet. There fore an electron will find some wiggle room. However we would expect the presence of at least three –nega quarks to equal a full charge meaning it would be equivalent to have the presence of another electron. Yet, we can deduce that since there are so many quarks in a nucleus at least larger than hydrogen, the multiple fractional charges may be what are responsible for the multiple energy levels or nuclear shells present in all atoms. The bunching of all those charges in the small area of nuclei **rentrilically** induces a 'stacking' of energy levels outwardly. In the center they might be chaotic in form, the energy shells, yet the farther from the nucleus they take form into smooth spherical shells. The shell form in the center is randomly displaced pieces of them and outwardly stacks together and form whole shells.* This is important because now we see how the electron can move in and out even in the face of all those opposing charges.

*(Then again, experiment does show that electrons sometime jump from place to place, jiggling and pulling disappearing and reappearing acts. There are several possibilities for this, one related to another theory called **TQS** and the other may be simply that the outer shells, though perhaps less chaotic than seen at the interior of the nucleus are still very chaotic. We can call it *chaotic shell spacing*. This is analogous to inverse shattered symmetry related to the condition of the forces of nature before they separated. I.e. space, time, matter, energy and the forces of nature were all symmetrically woven in a universally centered condensed form. Whereas in regards to the atoms shells in the center the symmetry of the shells are shattered yet more outwardly we find more symmetry in the shells.)

So how does light come from an electron moving in and out? It is not altogether clear but centuries of experimentation and particularly relatively recent, has shown that light consist of small packet of energy which come from inside the nucleus as the bright hot stuff seen in fission and fusion and also light bulb filaments and lightening. Fission and fusion produces raw energy. Light bulb filaments for example emit tame energy, which also comes from the nucleus but passes through *the gate of the electron*. This means that for some reason energy coming from the nucleus is show to be emitted from an electron as if the electron has to admit the light **quantum**. Also the electron can receive light quantum and admit them into the center. When this happens the electron rises to a higher energy shell. When is emits a photon it moves in closer. The light photon seems to be squeezed out by the electron due to a tension imbalance. Recall how the electron is balanced by the combination of push and pull of positive and negative charges leavening a kind of a stationary stiffness in it position? Well if we imagine that, unseen, are filled in between the electrons and the nucleus transferring of electromagnetic energy when it forces its way closer to the nucleus the bubble is popped and a photon or photons of energy spits out via the electron. If you squeeze a water-filled sponge as the sponge shrinks water spills out, a crude but helpful analogy. And vice versa if you squeeze a dry sponge and dip in water then release water absorbs. In a way all matter and atoms are at all time immersed in a sea of energy whether visible or not, from heat, to light, to other matter around it. So if electrons around an atom or squeezing inward like a sponge then that seems to say that there is a movement in the balance of charge intensity to –posi quarks pulling the electrons in and pushing light out. What would cause the –posi quarks to intensify their charge? Well we know that heat is what makes light emit from an atom. **Nuclear vibratory resonance** would seem to be what is making heat thus light. If the nucleus is in a state of vibration the charges of the quarks are jostling against one another making a constant swapping of power. There are usually more fractionally positive quarks therefore they hold the most influence but still loses a bit in the tug of war between the –nega quarks as they are vibrated. Each time the power transfers to the –posi quarks the charge is amplified and the orbiting electrons pull

inward spilling light particles. We can call this a function of ***Electro-thermo Kinetics***. In order for a nucleus to vibrate it would have to do so in relation to something to be able to make all this happen. The only thing it can vibrate in relation to is space. TQS, The Theory of Quantized Space will follow-up up on this.

Glossary

Allotted Orbital Zone – A spherical region around an atom where electrons can orbit being held in position by the force of push and pull.

Atomic Number – An enumeration representing the number of positive particles (protons) in an atomic nucleus.

Baryon – A classification of atomic particles usually heavy ones such as the proton and neutron.

Bindable – Able to be binded.

Centrifigulism – In this case, a belief the concept of centrifugal.

Charge – A concentration of polarized force, as an aspect of matter, which is a constituent of condensed energy by way of the shattered symmetry of pure energy.

Conclusionarily – As to speak an idea or set ideas in conclusion.

Electromagnetism – A force, which constitutes electric and magnetic phenomena.

Electron – A comparatively low mass atomic particle negatively charged.

Fractional Charges – A degree of charge theorized to host the quark particle of specific types.

Intervaled – A concept meaning of a state of patternized gaps in time, space, or matter.

Magnetic Moment – A time or interval be it random or steady when a neutron or other particle is magnetic.

Negative – The opposite charge of positive.

Neutron – The neutrally charged particle found at the center of an atom and sometimes in free space.

Nuclear Vibratory Resonance – The contained motion of the nucleus of an atom as a response to an external disturbance.

Nucleons – The particles a part of the nucleus of an atom.

Positive – The opposite charge of negative.

Proton – The positively charged particle found at the center of atoms and sometimes in free space.

Quarks – The particles of perhaps regional constants that make up a nucleon composed of three.

Rentrilically – Adverb of the word rentrilic or rentril, which means

The Strong Force – The force, which binds the nucleons of an atom together.