



## CHAPTER TWENTY-FOUR

### The Unification of Newtonian Physics and Quantum Mechanics:

#### The Wave Function $\psi$ and the Fundamental Theorem of Space Curves

##### Tovacian Generation of the Nucleon

We have thus far derived the mass of the electron and empirically established the mass of the proton. Having used the hydrogen atom as an example, if one considers the electron as a particle on a sphere then the nucleus must be considered as the sphere around which it orbits. By default the proton must then be considered as confined within a sphere. This approach makes it possible to compute an appropriate eigenvalue of the Schrödinger equation for the nucleus bound proton as well as the computation of its mass. This eigenvalue must therefore be descriptive of a particle *in* a sphere. Note that the eigenvalues do not force the particles to stay within the sphere (box) but is only descriptive of the energy that such a bound particle might possess. Through the GFT, given that the proton is composed of three quarks, i.e.,

$$proton_{mass} = 4\pi \left[ \left( \frac{m_e}{\alpha} \right) + \left( \frac{m_e}{16\alpha} \right) \right] + \left( \frac{m_e}{16\alpha} \right) = \left( 4\pi \frac{m_e}{\alpha} \right) + \left( 4\pi \frac{m_e}{16\alpha} \right) + \left( \frac{m_e}{16\alpha} \right) = 938.53 MeV$$

the GFT has provided an explanation as to why these quarks are constrained to reside within a spherical nucleus that has, so far, been deduced to exist, and which is perfectly explicable via the precepts of Kepler's Third Law *if the nucleus repulses its orbiting counterpart*. This Keplerian principle is, however, rooted in the interaction of mass. We now seek a more general principle that might limit the movement of charged particles to the confines of a sphere or other enclosures and to establish the Keplerian principle within a more solid theoretical framework.

Conventional interpretation of the experimental evidence establishes the existence of an electrostatic attraction between the electron and the proton in a hydrogen atom. According to the GFT, this would indicate that the resultant vectors of the electron and proton components are parallel. Such parallel arrangements of charge are untenable when one attempts to aggregate this electron/proton pairing due to an ensuing electrostatic repulsion between the like charged particles. The Standard Model establishes an elaborate theory of gluons and the strong force where quarks are bound into particles and nucleons into nuclei, respectively. The existence of the strong force, putatively, overcomes any electrostatic repulsion experienced by the nucleus bound nucleons. Note that the existence of this force is largely postulated. Even though there may exist some experimental evidence regarding quark confinement the primary proof of its existence is the absence of any appreciable electrostatic repulsive effects among the nucleons. Chapter Eight established that in the case of the electron, the tovacian aggregation of its fractional quark components effectively obviates any electrostatic

repulsion. *It is the contention of the GFT that such tovacian bonding is utilized in the aggregation of nucleons and electrons to form atoms.*

### **The Tovacian Principles and Postulates of the Gyroscopic Force Theory**

Chapter Four introduced the three postulates of the GFT and several corollaries. The gist of the postulates and corollaries is that all motions and energies are explicable via an angular momentum paradigm. This is essentially the thrust of the quantum mechanical formalism also (three of the four quantum numbers involve angular momentum.) This mathematical aspect of a quantum mechanics is perfectly acceptable; however, the accompanying theory leads to severe theoretical inconsistencies and obvious absurdities, which may be acceptable within a quantum mechanical theoretical context but wholly untenable within a classical common sense context. The GFT provides a much more reasonable classical explanation via an angular momentum approach, however, by limiting its focus solely upon angular momentum the range and scope of the GFT, particularly in regards to charge, becomes limited. Recall the GFT is so named because it is essentially predicated upon the dynamics of precession, and thus any principles of the theory should ultimately be based upon such. We therefore state the principles and postulates of the GFT in terms of precession. Indeed, said principles and postulates actually establish the foundation of the whole of physics.

### **The Fundamental Principles of Physics**

- I. The fundamental theorem of the space curve applied to rotating and precessing charge.
- II. The Tovacian principle of charge interaction

### **The Fundamental Postulates of Physics**

- I. All is the magnetic field.
- II. Charge is quanta of rotating magnetic field
- III. Accelerated charge precesses

*We may concisely state that any and all interactions are explicable via the gyrodynamic and tovacian interaction of rotating and precessing charges coupled with the fundamental theorem of space curves that defines such interactions.*

### **A Differential Geometrical Analysis of Charge Interaction**

We shall now explore some of the consequences of the tovacian principles and postulates of the GFT by once again exploring the nature of the Schrödinger Equation. The solution to a differential equation of the form

$$\frac{d^2 y}{dt^2} + \varpi^2 y = 0 \quad (24.1)$$

May be expressed as

$$y = Ce^{i\varpi t} + De^{-i\varpi t} \quad (24.2)$$

or

$$y = A \sin \omega t + B \cos \omega t \quad (24.3)$$

whichever is most appropriate for the problem under consideration.

The one-dimensional Schrödinger equations is stated as

$$\frac{d^2 \psi}{dx^2} + \frac{8\pi^2 m}{h^2} (E - V) \psi = 0 \quad (24.4)$$

If, for a particular state of the system, both the potential and total energy is constant we may then state

$$\frac{8\pi^2 m}{h^2} (E - V) = k^2 \quad (24.5)$$

where k is a constant. Therefore

$$\frac{d^2 \psi}{dx^2} + k^2 \psi = 0 \quad (24.6)$$

which is the exact form as equation (1) therefore a trigonometric solution to the one dimensional Schrödinger equation for a constant V is

$$\psi = A \sin kx + B \cos kx \quad (24.7)$$

where A, B, and k are constants. (Denardo)

From differential geometry the Fundamental Theorem of Space Curves states *the curvature  $\kappa$ , and the torsion  $\tau$ , as function of arc length, determine a space curve uniquely up to rigid motion*. If an electron were to follow such a curve then the first postulate of quantum mechanic states that the wave function  $\psi$  tells us everything we can know about that particle. If this is true then logically

$$\psi = \kappa + \tau \quad (24.8)$$

To prove this mathematically it has been shown that for a curve of constant precession

$$\kappa(x) = a \sin bx \quad (24.9)$$

and

$$\tau(x) = a \cos bx \quad (24.10)$$

where a and b are arbitrary constants. (Scofield and Opera) Therefore

$$\kappa(x) + \tau(x) = a \sin bx + a \cos bx \quad (24.11)$$

Note that the right side of equation (24.11) exhibits the exact form as the right side of equation (24.7) therefore

$$\psi = \kappa + \tau \quad (24.8)$$

**QED**

### **$\psi$ as Centrode**

Any plane motion of an aggregate of points can be replaced by a translation of some reference point,  $A$ , located within the aggregate and a simultaneous rotation

about  $A$ , therefore the velocity,  $\vec{V}$ , of point  $A$  and the angular velocity,  $\varpi$ , of the aggregate completely defines the velocities of all other points in the aggregate. The velocities of all the points in the aggregate may also be obtained by allowing the aggregate to rotate with angular velocity  $\varpi$  about some point  $C$  located orthogonal to  $\vec{V}$  at a distance  $r = \frac{V}{\varpi}$ . The position demarcated by  $C$  is the instantaneous center

of rotation. As the slab moves in  $\vec{V}$ , the instantaneous center of rotation moves in space. The movement of the instantaneous center describes one curve in space called the space centrode and another curve within the aggregate called the body centrode. At any instant the two curves are tangent. Also as the aggregate moves with  $\vec{V}$  the body centrode appears to roll on the space centrode.

Recall that the GFT defined a particle undergoing precession as an accelerated particle simultaneously subjected to two orthogonal forces. This definition includes a particle simultaneously rotating in two independent frames, which is a requirement of the point  $C$ . Given the previous definition and description of the space centrode it is obvious that the aggregate is undergoing precession and that the space curve describes a curve of constant precession as long as  $\vec{V}$  and  $\varpi$  are non zero.

Through differential geometry it is proven (Scofield) that the centrode of a curve of constant precession may be characterized as

$$C = \kappa + \tau \quad (24.12)$$

where  $C$  is the centrode. Therefore given equation (24.8)

$$\psi = C \quad (24.13)$$

Indeed, the first postulate of quantum mechanics proves to be no more than a restatement of the Fundamental Theorem of Space Curves.

### **The Precessional Genesis of Atomic Structure**

The axis of the instantaneous center of rotation of the Frenet frame,  $C$ , simultaneously defines both the space centrode and the body centrode. The orthonormal tangent, normal, and binormal unit vectors  $T$ ,  $N$ , and  $B$  define the Frenet frame respectively. Allowing the space centrode to define the path of an electron, each vector of the Frenet frame can then be interpreted as also defining the path of some particle, which interacts orthogonal to the electron along this path.

The orbital path of an electron in an atom may now be characterized as the centrode of a curve of a particle undergoing constant precession. Hydrogen is simply composed of an electron and its evolute, the proton. Deuterium has its proton assuming the role of the body centrode via the tangent indicatrix. Its neutron forms an envelope of all the normals to all the tangents, a pedal, which is composed of the Frenet Frame. The  $N$  vector is normal to  $C$ , the orbiting electron, therefore,  $N$  as an evolute of  $C$ , forms the neutronic proton. The  $T$  vector is normal to  $N$  therefore it forms the neutronic electron. The binormal vector  $B$  is normal to both  $T$  and  $N$  and thus forms the neutral neutrino. Since all particles within the nucleus are particles of evolution they must obligatorily interact within a tovacian bonding scheme thereby obviating any appreciable electrostatic repulsion amongst both the electrons and the nucleons. It is the various combination and permutation of tovacian bonding amongst these evolutes that account for the formation of atomic nuclei and their isotopes and which obviates the need for the conventional concept of a strong force.

### **Intrinsic spin and Nucleus Formation**

All electrons possess a spin of one half or intrinsic spin. A conventional spin rotation of 360 degrees of an object returns that object to its original position. Intrinsic spin rotation of 720 degrees returns the object back to its original position. Equivalently, a 90 degree intrinsic spin is equivalent to a 180 degree conventional spin. This phenomenon is supposedly only explicable via a quantum mechanical theoretical construct. This is demonstrably false. The basis of intrinsic spin was established in Chapter Seven. Intrinsic spin is also very simply and concisely explicable via space curve evolution of a spherical helix (a three dimensional epicycloid). The evolute is defined as the envelope of the normals to a given curve. The evolute of a spherical helix is equal to itself. The evolute is scaled and rotated so that the old curve's cusp/vertex coincides with the new curve's vertex/cusp. Polar opposite curves are conventionally formed by reversing the original curve a full 180 degrees, however, in this case by rotating a nuclear copy of the progenitor curve 90 degrees cusp and vertex of the nuclear copy and progenitor are juxtaposed thus placing the curves at a final 180 degrees orientation. This is the essence of intrinsic spin.

The evolute of the spherical helix is a reduced version of itself. This reduced version is obligatorily situated at the original's center. This imposes upon the progenitor spherical helix a nucleus that is identical in structure to itself. The

**evolution of a set of epicycloidal particles effectively creates a nucleus. The evolved nucleus is obligatorily “pinned” to the center of the aggregate. Thus, a very simple and concise classical explanation, via space curve architecture, is provided for both the genesis of an atomic nucleus and the existence of intrinsic spin.**