Why the quantum-dimensional atomic model predicts MIT's LED21Sr electronics data and the standard model cannot

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The LED21Sr emits 2.15 micrometer light (mid range infrared) by Peltier cooling across the band gap. The band gap is the variance in electron voltage between the valence subshell, where the electron naturally resides, and the conduction subshell to which the electron must fall in order for an electric current to exist.

Peltier cooling identifies a form of thermo-electric light pumping. The required electron voltage reduction across the band gap is provided by a current-stimulated exchange of heat loss for the light emission. The amount of lost thermal energy (which has reduced band-gap electron voltage) is measured by the energy of the light emission.

MIT's measurement of band-gap eV predicted by quantum-dimensional math

Band gap was measured electronically[1] using a complex modification of the Shockley formula[2]. While the study did not provide raw calculations for band gap eV, they did present the results graphically.[3] The MIT calculations are predicted by the precise quantum-dimensional model of the electron orbital structure, but could not be predicted by the imprecise and incorrect model from contemporary quantum mechanics which is heretofore designated as "the standard/Schrodinger atomic model."

Quantum-dimensional orbital model correctly predicts measured band-gap eV
(MIT's "Fig. 1-b" as annotated by author)
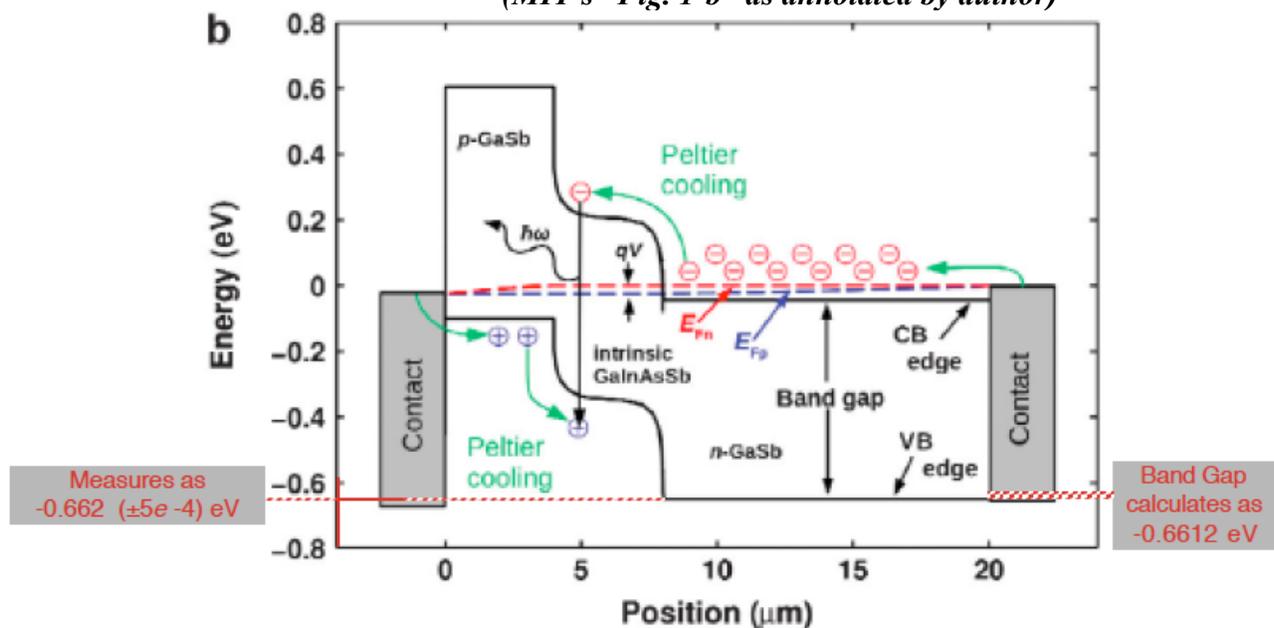
The "Fig. 1-b" band-gap electron voltage can be calculated as the fall from the "Sb" valence subshell from the InGaAsSb diode ("5f" subshell at 0.9673 eV) to the conduction subshell ("4f" subshell at 0.3061 eV). Band gap eV=(0.3061 eV)-(0.9673 eV)=-0.6612 eV.

1 *"Band Gap Measurement,"* Yongji Gong, Andrew R. Barron. *This work is produced by OpenStax-CNX and licensed under the Creative Commons Attribution License 3.0;* http://www.paradigmphysics.com/band-gap-measurement-1.pdf
2 *SUPPLEMENTAL INFORMATION:* "Thermoelectrically Pumped Light-Emitting Diodes Operating above Unity Efficiency," Parthiban Santhanam, Dodd Joseph Gray, Jr., and Rajeev J. Ram; p.p. 3-6. 10.1103/PhysRevLett.108.097403. http://www.paradigmphysics.com/PhysRevLett097403supplemental.pdf
3 *"Thermoelectrically Pumped Light-Emitting Diodes Operating above Unity Efficiency,"* Parthiban Santhanam, Dodd Joseph Gray, Jr., and Rajeev J. Ram; Fig. 1-b, p. 097403-2. http://www.paradigmphysics.com/PhysRevLett.108.097403.pdf

"Sb" (Antimony) establishes the band-gap valence subshell. The "pin" diode was composed of an n junction "GaSb" substrata, an InGaAsSb active "i" region and a p junction "GaSb" cap layer.[4]

Neither the valence subshell nor its electron voltage[5] can be calculated using the standard quantum mechanical model of Antimony's electron configuration. However, those calculations can be made using the quantum-dimensional model.

<div align="center">

Standard Model for Antimony (atomic number 51) Electron Configuration[6] vs. the Quantum-Dimensional Model[7]

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Incorrect standard model of subshell infill (using the Schrodinger infill formula)	$1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^{10}$ (4f missing) $5s^2 5p^3$ (5d missing) (5f missing) (5g missing)
Correct quantum-dimensional model of subshell infill (from nested orbital doublets as provided by an anomalous magnetic moment of electron spin)	$1s^2 2p^4 2s^2 3d^6 3p^4 3s^2$ $4f^8$ (conduction subshell) $4d^6 4p^4 4s^2 5g^{10}$ $5f^1$ (valence subshell)

The Standard/Schrodinger model of Antimony electron configuration violates the Subshell Infill Law and cannot identify the conduction subshell nor calculate MIT's measured band gap eV

The standard model for electron shell/subshell configuration is built upon the formula for electron infill proposed by Erwin Schrodinger. Schrodinger proposed a nonlinear equation for an internal standing wave within the electron orbit to which he applied a Hamiltonian solution. The Hamiltonian derived a graphic for the internal standing wave which was similar in shape to a " bloated infinity sign." Schrodinger took this graphic to be the shape, in two dimensions, of the electron orbit. He then extended the shape into a three dimensional "lobed orbital" using an Eigenfunction. He further proposed that the subshells contained within a shell provided varying numbers of these "lobed orbitals" based upon an "angular moment number." Each of the "lobes" could contain two electrons as per the "Pauli exclusion principle." In this manner, Schrodinger assigned a specific electron capacity to each subshell.

However, it has been recently mathematically proved that Schrodinger's graphic Hamiltonian solution was only a partial of the graph of the standing wave. It was not the shape of the orbit itself which Schrodinger had assumed it to be.[8] This recent revelation identified the Schrodinger derivation as being more consistent with the actual mathematical operations of a Hamiltonian.

In the eighty years since the Schrodinger model was first proposed, the error has been accepted by scientific consensus and applied to the Periodic Table of Elements without rigorous empirical testing. It has become the standard model for atomic electron configurations. Error has been solidified into scientific dogma.

Schrodinger's erroneous math assigns excessive numbers of electrons to the subshell structure, especially to lower order subshells. This excessive assignment has forced the standard electron-configuration model to "skip" some lower-order subshells for proposed infill patterns in order to make the Schrodinger electron assignment fit the atomic number of the element. An infill pattern was chosen which violated the Law of Electron Infill. In order to avoid the excessive electron capacities of lower

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4   SUPPLEMENTAL INFORMATION: "Thermoelectrically Pumped Light-Emitting Diodes Operating above Unity Efficiency," p. 3. Op. Cit.

5   "Four Dimensional Atomic Structure," Tab 0 ; Dawson, Lawrence; Paradigm Publishing, 2013.

6   http://www.tabulka.cz/english/elements/configuration.asp?id=51

7   "Four Dimensional Atomic Structure," Tab 1-A, p.p. 1-8; Dawson, Lawrence; Paradigm Publishing, 2013.

8   Ibid. Tab 2 "The Failure of the Schrödinger Model of Electron Orbitals"

order subshells stationed in higher order shells, the shells were said to be infilled from the highest energy "s" subshell with its lowest number of available electrons to the lowest energy subshells with their excessive infill capacities. The inverted shell infill pattern allowed higher capacity subshells to be dropped.

The inverted infill pattern of the standard model violates the Law of Electron Infill. The law states that, in order to establish electrons in fixed orbits, the electrons must be infilled from the lowest energy state to the highest energy state. The Schrodinger model proposal that shells be infilled from the highest energy subshell to the lowest energy subshell to provide the possible elimination of high-capacity lower-order subshells. This can leave gaps in the required infill energy hierarchy.

Standard Model Infill Pattern for Antimony not Possible

A case in point is the Antimony of MIT's LED21Sr. By the standard model for Antimony, all of the subshells in the first three shells are filled to capacity, starting with the lowest energy "1s" subshell. However, an inverted infill of the "4" shell allows the lowest energy "4f" subshell to be left empty. By the Schrodinger infill formula, an "f " subshell can accommodate 14 electrons.[9]

Of the 51 Antimony electrons, 46 are said to be stationed in the first three shells and in the "4s," "4p," and "4d" subshells. The "4f" has been skipped. A "4f" (0.3061 eV)[10] energy gap exists between the next higher "4d" subshell (0.4723 eV) and the next lower "3s" subshell (0.3316 eV).

The "4f" subshell is an anomaly. It is the only subshell with an energy state which is lower than its immediate subordinate subshell (the "3s") and its immediate superior subshell (the "4d"). If the "4f" is left empty, as the standard model supposes, what is to prevent electrons stationed in the "4d" or the "3s" from migrating or falling into the "4f?" A fixed electron structure for Antimony is simply not possible with a "4f" gap as proposed by the Schrodinger standard model.

The Quantum-Dimensional Shell/Subshell Infill Model

By the quantum dimensional model, a subshell's electron infill capacity is determined by the number of "nested doublets" provided to the subshell by electron voltages across the shell. Capacity is not supplied by the number of Schrodinger's misidentified "lobed orbitals." The number of doublets which can be nested by a subshell is determined by the variances between the subshell's own electron voltage and the electron voltage of the highest energy "s" subshell within the shell. The difference in electron voltage between a subshell and the "s" subshell is always approximately twice that of the difference between the next highest subshell and the "s" subshell.[11] This doubling in electron voltage across the shell for a subordinate subshell allows that subshell to "nest" its own doublet within the "doublet nest" established by the immediate superior subshell.

A doublet is a set of slightly offset orbits from the primary subshell orbit. The doublet orbits can accommodate two electrons, not just one. The existence of these offset orbits is revealed by the splitting of a spectral line into doublets known as a spectral line's "fine structure." Such light doublets exist as a spectrographic anomaly for hydrogen's "6h" subshell, the last subshell in the visible spectrum shell[12].

The Rydberg formulations of the hydrogen spectrographic record established the shell/subshell convention as well as subshell electron voltages[13]. Because the Rydberg distribution of the hydrogen spectrograph established both the shell/subshell convention as well as subshell electron voltages, the hydrogen spectral "6h" doublet indicates two possible offset orbits the electron might take in the "6h"

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9   "Four Dimensional Atomic Structure," Tab 2, p.6. Op. Cit.
10 Ibid. Tab 10, "The Quantum Geometric Periodic Table of Elements"
11 Ibid. Tab 1-A, "Doubling 'eV' across Shells for Succeeding Subshells Solves Nested Doublets;" p. 3
12 Ibid. Tab 1-A, p.p. 1-3.
13 See Appendix *"Subshells are the Negation of Subdivision of the Quantum Squared with the Quantum being the Root Orbital Distance (the correct interpretation of the Rydberg hydrogen spectrographic distribution)"*

subshell. While the standard model of the electron orbitals provides "*ipse dixit* explanations[14]" for the slightly offset orbits, the quantum-dimensional model provides a mathematical formula using known forces which accurately predicts the doublet offset from "6h's" electron voltage.

The Mathematics Governing the Quantum-Dimensional Orbital Model

Quantum-dimensional mathematics provides a geometrically regular orbital structure which may be "counter intuitive" because it is constructed in a four-dimensional space which incorporates the quantum dimension and there is no observable model for its geometric regularity in our familiar three dimensional Euclidean space. The four-dimensional structure is provided by a very rare form of soliton mathematics known as "1+1 dimensional kink scalar field theory.[15]"

In this case, the "kink manifold" is provided by quantum dimensional mathematics. Within the orbital, the line of force projection for electron charge is rotated 90° relative to the line of force projection for proton charge. The electron line of charge is then "kinked" into curvature by quantum force[16] to provide a very unique orbital pathway. This "kinking" constructs six planes which intersect what might be termed the "plane of planetary orbit" at 90°.[17] The electron follows the curved path upon the kink plane with the axis of electron spin being forced perpendicular or 90° to the kink plane. The enforcement occurs because the electron is a quantum particle and its axis of spin must be held 90° to the particle's line of charge[18].

The kink planes intersect one another at a 120° angle. The electron's axis of spin must be readjusted as the particle moves from one plane to an adjacent plane. A new inclination of axis is required to reacquire the axis's 90° position relative to the new line of charge pathway upon the new kink plane. The axis re-inclination across planes creates a new force vector for the magnetic field which the electron's spin is creating. This new vector is similar to the counter forces which oppose deflections of the spin axis for a gyroscopes or which allows a motorcycle to "lean" into a curve.

The transition from one kink plane to the adjacent also represents the change from a positive force, "spin-induced" magnetic field (northern pole) to a negative force, "spin-induced" magnetic field (southern pole).[19] The new vector of force from axis displacement is positive for the northern pole plane and negative for the southern pole plane. Positive inclined force increases orbital distance and negative inclined force decreases orbital distance. In combination they produce the doublet.

A quantum-dimensional formula for this process was developed which accurately calculated the doublet change in electron voltages as empirically measured from the fine structure of the "6h" hydrogen spectrograph[20]. The formula identifies doublet changes in subshell electron voltage as a mathematical function of subshell electron voltage, the Bohr magneton, an anomalous magnetic moment from spin axis realignment and the time across the wave-phase between adjacent kink planes which is shown to be a constant[21] for all orbitals.

An Empirical Test of the Nested Doublet vs. the Schrodinger Subshell Infill Formulas

Both the Schrodinger and the nested-doublet infill formulas depend upon a set of whole numbers assigned to the subshells in descending order. The number "0" is assigned the "s" subshell and the

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14 The assertion is made, but not proved, that the offset is caused by 1/2 electron spin vs. 3/2 electron spin.

15 "*Kink manifolds in (1+1)-dimensional scalar field theory*" A Alonso Izquierdo *et al* 1998 *J. Phys. A: Math. Gen.* **31** 209. doi:10.1088/0305-4470/31/1/021

16 In quantum-dimensional mathematics, a force is always required to establish a quantum distance. See Four-dimensional Atomic Structure; APPENDIX; *"Four Dimensional Orbital Structure,"* p.p.1-3. Op. Cit.

17 Four Dimensional Atomic Structure, Tab 1, *"Three-Dimensional Orbital in Four-Dimensional Space,"* p.3. Op. Cit.

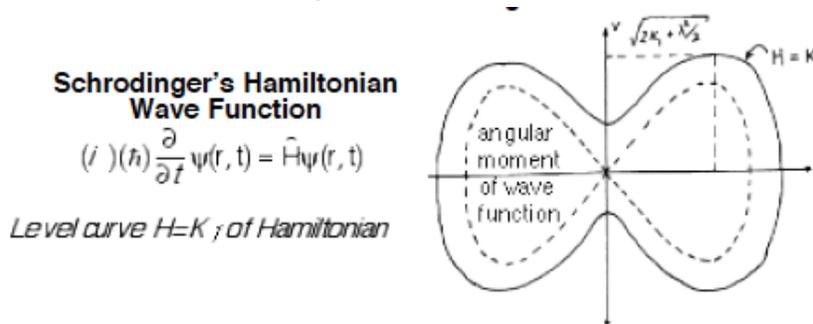18 Ibid, Appendix, p.p.1-6 "*Four-Dimensional Orbital Structure*"

19 *"Magnetism and Quantum-Dimensional Mathematics"* http://www.srnrl.com/id46.html

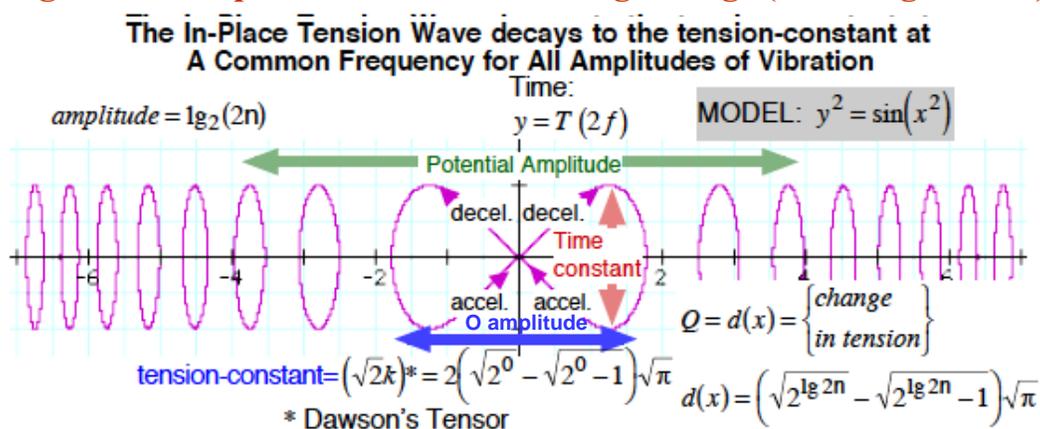20 *Hydrogen Fine Structure* , hyperphysics.phy-astr.gsu.edu/Hbase/quantum/hydfin.html#c1

21 Four Dimensional Atomic Structure, Tab 6, "*The Derivations of the Alpha Space, the Wave-Phase Time Constant and Planck's Constant from Dawson's Tensor"* Op. Cit.

number 7 assigned the last "i" subshell. In Schrodinger's case, he called this number the "angular moment number[22]" By "angular moment" he meant the angles which his misidentified Hamiltonian solution appeared to have.

Schrodinger misidentified the Hamiltonian solution to his Intra-Orbit Standing-Wave Function as two "Angular Moments" to the Orbital Shape[23]

Schrodinger's Hamiltonian Wave Function

$$(i\ )(\hbar)\frac{\partial}{\partial t}\psi(r,t) = \hat{H}\psi(r,t)$$

Level curve H=K ; of Hamiltonian

angular moment of wave function

Schrodinger's "Lobed Orbital" is actually the "0 Amplitude Wave" on the Standing-Wave Graph to which all Vibrating Strings (Standing-Waves) Decay

The In-Place Tension Wave decays to the tension-constant at A Common Frequency for All Amplitudes of Vibration

$amplitude = \lg_2(2n)$

Time: $y = T(2f)$

MODEL: $y^2 = \sin(x^2)$

Potential Amplitude

decel. decel.

Time constant

accel. accel.

O amplitude

$Q = d(x) = \begin{cases} change \\ in\ tension \end{cases}$

tension-constant $= (\sqrt{2k})* = 2(\sqrt{2^0} - \sqrt{2^0 - 1})\sqrt{\pi}$

$d(x) = (\sqrt{2^{\lg 2n}} - \sqrt{2^{\lg 2n} - 1})\sqrt{\pi}$

* Dawson's Tensor

Schrodinger mistakenly presumed that each "angular moment" comprised two alleged "orbital lobes." Each "orbital lobe" could contain two electrons by the Pauli exclusion principle. An "angular moment number" was assigned to each subshell starting with "0" for the "s" subshell and increased by one numeric unit for each descending subshell ending with "7" for the lowest "i" subshell. Each subshell could store two electrons plus the number of electrons which could be stored in the number of "lobed orbitals" the subshell allegedly possessed. Schrodinger's infill formula is the following: (subshell capacity)$=2+n(2^2)$ where "n" is an "angular moment" number applied as an *ipse dixit*[24] assignment to the subshell.

The Nested-Doublet Subshell infill Formula

The nested-doublet formula is the following: "2+n(2)," where "n" is the number of shell-supplied doublets into which the subshell can nest its own doublet. The highest energy "s" subshell has "0" shell supplied doublets, the "p" has "1" shell supplied doublet, the "d" has "2" shell supplied doublets and so forth.

The "n" shell-supplied doublet number is the exact equivalent of Schrodinger's "n" angular moment

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22 Four Dimensional Atomic Structure, Tab 2, "*The Failure of the Schrödinger Model of Electron Orbitals*" p.3. Op. cit
23 Ibid. P. 4.
24 *ipse dixit* (ip-sah dicks-it) v. Latin for "he himself said it," meaning the only proof we have of the fact is that this person said it.   http://dictionary.law.com/Default.aspx?selected=1027

number, but with one great difference. The shell-supplied doublet number represents mathematically measurable electron-resting capacities provided the subshell by electron voltage across the shell.
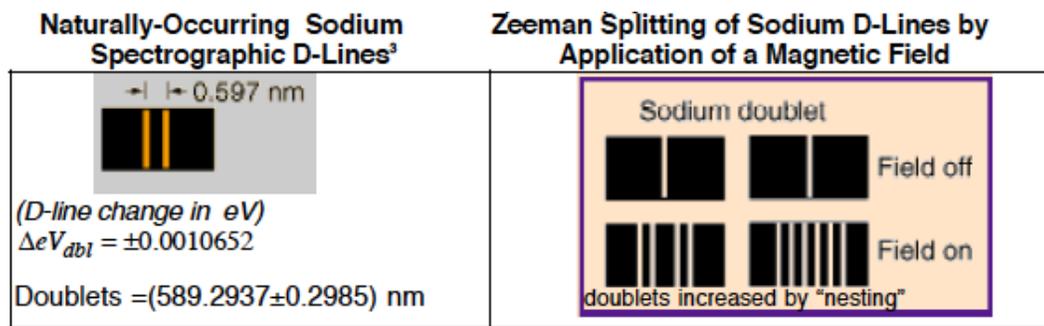
The doublet is a mathematical function of subshell electron voltage, the anomalous magnetic moment, as well as a wave-phase time constant. The anomalous magnetic moment is also a constant for all subshells. Therefore, doublet offset distances are purely a function of subshell electron voltages since both of the other factors are constants. Nesting occurs because the electron voltages of superior subshells can be applied by a subordinate subshell to provide additional doublet resting places for electrons. This is possible because subshells are all quantum mathematical functions of, and, therefore, physical components of shells.

The Sodium "D-Lines" and the Zeeman Effect upon them prove the Nested-Doublet Infill Formula to be correct and Schrodinger's *Ipse Dixit* Formula to be incorrect

The "D-lines" are a naturally occurring light doublet present on the spectrograph of energized sodium. They are doublet spectral lines offset from 589.237 nm by ±0.2985 nm[25]. This represents an electron voltage offset of ±0.0010652 eV for the doublet. Electron voltage offset is the measurement used by the formula which calculates doublet orbital offset for any subshell.

The sodium "D-lines" reside between the visible light output by the "6g" subshell (486.1 nm) and that output by the lowest "6h" subshell (656.23 nm). The spectral lines appear when the nucleus of heated sodium attempt to move all eleven of the sodium electrons from the "6h" subshell (capacity 12) to the higher "6g" (capacity 10). The "6g" does not have the capacity to receive all eleven and one gets "stuck" between the "6g" and "6h" putting out the doublet light emission.

The "D-lines" are then a measure of the electron capacity of the "6g" subshell. This assertion remains only an *ipse dixit* claim unless proof is offered that such electron migration is actually occurring. That proof is provided by the influence upon the "D-lines" from an externally applied electromagnetic field. The influence of an an externally applied field was demonstrated by Pieter Zeeman and has become known to science as the "Zeeman effect."

Naturally-Occurring Sodium Spectrographic D-Lines[3]

←| |← 0.597 nm

(D-line change in eV)
$\Delta eV_{dbl} = \pm 0.0010652$

Doublets = (589.2937±0.2985) nm

Zeeman Splitting of Sodium D-Lines by Application of a Magnetic Field

Sodium doublet

Field off

Field on

doublets increased by "nesting"

[26]

Testing Schrodinger vs. Nested-Doublet Capacities by the Zeeman Effect

The Schrodinger calculation of "6g" subshell electron capacity is the following: ("n" angular moments for a "g" subshell)=4; capacity=$2+n(2^2)$=18 electrons. The nested-doublet calculation of "6g" subshell capacity is the following: ("n" shell-supplied doublets for a "g" subshell)=4; capacity=$2+n(2)$=10 electrons.

When Pieter Zeeman applied a magnetic field to energized sodium which was producing the "D-lines" (and lost his lab position as a result of his forbidden experiment) he discovered that the two line doublet had further split into five doublets of ten lines. Neither Zeeman nor subsequent science realized what he had actually discovered. He had increased the anomalous magnetic moment of the "D-line" electron

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25 "Four Dimensional Atomic Structure," Tab 1-A; *Using Electromagnetic Fields to Probe Electron Orbital Ionization.* p.1 Op. Cit.

26 Ibid.

orbital, further splitting the shorter wavelength D line into two doublets (four orbits) and the longer wavelength D-line into three doublets (six orbits). An increased doublet capacity was provided the anomalous magnetic moment of the "D" electron's orbital by the Zeeman magnetic field. That increased doublet capacity revealed the number of electrons in the "6g" subshell to which the "D" electron was inclining but from which it had been excluded.

The Zeeman effect reveals the number of electrons in the "6g" subshell to be "10." This confirms the nested doublet infill calculation for the "6g" subshell as "10. " It further confirmed that 10 of sodium's 11 electrons were residing in the "6g" and that the last "D" electron had been excluded by insufficient "6g" subshell capacity. No amount of energy could force another electron into the "6g."

We know this to be the case by the difference in offset electron voltage between that calculated for the "6g" doublet and that measured for the "D-lines" doublet. By the quantum-dimensional formula, the "6g" doublet offset electron voltage calculates to "±0.0000535 eV." The "D-lines" doublet offset electron voltage measures as "±0.0010652." "D-lines" doublet offset eV is "(1.991)(10)" *times* the natural doublet offset eV of the "6g."

The "1.991" factor is significant because it fits the pattern by which lower-order subshells are provided nested doublets. An immediate subordinate subshell is provided the total doublet capacity of the immediate superior subshell because its electron voltage to the limit of the shell is approximately twice that of the shell limit for the next superior subshell.

The "D" orbital follows this pattern. It could potentially nest all 10 electrons in the immediately superior "6g" by adjustment of its anomalous magnetic moment (as proved by Zeeman). The quantum formula for the "6g" doublet offset shows that the measured "D line" offset electron voltage has been increased by nuclear energy investment to approximately twice (1.991) *times* the number of electrons stored in the "6g." The actual "D" orbital electron voltage (as opposed to the energy stored in its capacitance field from the nucleus) could not "nest" the "6g" electrons. Only by increasing the "D" orbit's anomalous magnetic moment by a Zeeman magnetic field can the "D" orbit actually accept the full compliment of "6g" electrons.

It is quite possible that Zeeman's magnetic field forced an exchange between the "10" electrons in the "6g" and the "1" electron left in the "D" position. Under the field, "10" electrons could now reside in the "D" position while only "1" electron would be left to resided in the "6g" subshell.

The Quantum Nested-Doublet Subshell Model and the Electrical Characteristics of Matter

While the sodium "D lines" and their multiplication by a Zeeman magnetic field provides strong proof for the nested doublet subshell infill formula, the strongest proof for the formula may be its ability to predict and explain the electric characteristics of matter.

The electronic measurements made by MIT in their LED21Sr "over unity" study clearly reveals the coherence between the quantum-dimensional subshell infill model and the electrical characteristics of the elements.

The Nested-Doublet Model and the Transition Conducting Metals

By the nested-doublet formula, the electrons possessed by the first twenty element (hydrogen to calcium) completely infill the the first three shells[27]. The twenty-first element (Scandium) is the beginning of the "b" chemical groupings in the Periodic Table as well as the beginning of the metallic conductor series (transition metals).

The introduction of the "b" chemical groupings to the Periodic Table by the metallic conductors is explained as a new set of valence infill patterns as provided by the quantum nested-doublet infill formula. For the first twenty elements, the valence subshells were typically fully infilled for the even

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27 "Four Dimensional Atomic Structure," Tab 10; *The Quantum Geometric Periodic Table of Elements.* Op. Cit.

numbered elements and fully infilled, minus one electron, for the odd numbered elements (excluding the noble gases which displayed a different infill pattern).

This pattern could be sustained because of the restricted number of electrons as provided by the "s," "p" and "d" subshells using the nested-doublet formula. This pattern is also sustained by the fact that the lowest "1s" is the only energy deficient orbital.[28] The "1s" may be evacuated, to the energy advantage of the atom, in order to meet the infill formula for the valence subshells as described above.

Maximum valence subshell infill provides for more efficient electron exchange during chemical bonding because of nested doublet energy demands. Subshells are infilled starting with the subshell's own doublet (the narrowest), then the immediately superior, slightly wider, subshell doublet and on to the highest energy and widest "s" doublet in the nest. Subordinate doublets are nested by the variance in electron voltage between the doublets own subshell and the highest "s" subshell.[29] Each jump from a subordinate doublet set to the next higher doublet set requires an energy investment equal to the inferior doublet's nesting eV requirements *minus* the superior doublet's nesting eV requirements.

To exchange an electron with a valence subshell which is filled to less than "capacity *minus* 2" (the "s" doublet is empty) requires an additional doublet energy investment for chemical compounding to occur. Energy must be invested to move the electron from a narrower doublet in the nest to the widest "s" doublet before the electron can be removed from the subshell for chemical exchanges. To acquire efficiency of compounding, the first twenty element in the periodic table tend to fill the valence subshell to near capacity with an electron always stationed in the widest "s" doublet.

There is one great difference between electrical conduction and chemical compounding. The energy for an electron exchange during conduction is provided by an external voltage along a circuit. The lattice structure of atoms, primarily a metallic lattice structure, makes possible an external voltage sustained by distant poles at the ends of the circuit. Each atom along this circuit must be alternatively positively and negatively ionized by the circuit voltage.

Externally applied voltage must remove an electron from a circuit atom, or positively ionize it, as well as station an electron in a circuit atom, or negatively ionize it. Electrical resistance is partially a function of the amount of energy the voltage requires to remove and station electrons within the atom and this is determined by the highest valence electron position within the doublet nest.

The conductance subshell is identified by the doublet infill model as the "4f" subshell which is the valence subshell for the first eight conducting metals[30] starting with Scandium (atomic number 21) and ending with Nickle (atomic number 28)[31] . The "4f" valence subshell for the first eight metal conductors is affirmed as the conductance subshell by the fact that it is the only subshell with an electron voltage smaller than both is immediate subordinate subshell (the "3s") and its immediate superior subshell (the "4d").[32] The "4f" functions as a channel, requiring energy to "drop" an electron into the "3s" or to "jump" an electron into the "4d."

The nested-doublet model, and its identification of the conducting "4f" as the valence subshell of the metal conductors, is proved by the measured resistivity[33] of the metal conductors in comparison to the resistivity of calcium.

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28 "Four Dimensional Atomic Structure," Tab 9; *Establishing the Lower Energy Limits on Orbital Subshells which can be Sustained by Standing-Wave Tension Energy: ("1s" Subshell is Deficient).* Op. Cit.
29 Ibid. Tab 1-A. p.3. *"Doubling 'eV' across Shells for Succeeding Subshells Solves Nested Doublets"*
30 The standard Schrodinger model identifies the valence subshell as the "4d" with a Schrodinger capacity of "10" electrons.
31 The nested doublet model assigns a maximum of "8" electrons to the "f" subshell, as opposed to a Schrodinger capacity of "18." *Four Dimensional Atomic Structure.* Tab 5, p. 2. Op. Cit.
32 "4f" eV is "0.3061." The eV of its immediate subordinate "3s" subshell is "0.3316." Its immediate superior "4d" subshell's eV is "0.4723." See *Four Dimensional Atomic Structure,* Tab 5." Op. Cit.
33 "The electrical resistivity, or specific resistance, ρ, is the resistance between the opposite faces of a metre cube of a material." http://www.webelements.com/periodicity/electrical_resistivity/

The resistivity of calcium (atomic number 20) is the ideal index for the resistivities of the first set of metal conductors because nested-doublet resistance to conductivity is eliminated for Calcium but not for the metal conductors. There is no nested-doublet resistance to removal of an electron into current from the "3s" valence subshell of Calcium. Further, all nested-doublet resistance to the placement of an additional Calcium electron by dropping it across the shell boundary into the "4f" is also removed. The drop across the shell boundary to place an additional electron in the lowest order, natural doublet of the "4f" during a current flow gains as much energy as is required to overcome nested-doublet resistance to placement in the lowest order and least energetic natural doublet.[34] This is proved by the fact that Calcium resistivity is lower than resistivity of the first eight metal conductors which do not have this advantage.

The relationship between Calcium resistivity and the metal conductors is given in the following table showing the product of the conductor element's resistivity as divided by Calcium resistivity.

Measured Elemental Electrical Resistivity as a Multiple of Calcium Resistivity[35]
vs. the Predicted Calcium Resistivity Multiple using the Doublet Infill Formula.
(for the "B Grouped" Metallic Conductors)

Elem.	Sc	Ti	V	Cr	Mn*	Fe	Co	Ni	Cu	Zn
Atm. No. **Group**	21 *Grp. 3b*	22 *Grp. 4b*	23 *Grp. 5b*	24 *Grp. 6b*	25 *Grp. 7b*	26 *Grp. 8*	27 *Grp. 8*	28 *Grp. 8*	29 *Grp. 1b*	30 *Grp. 2b*
Valence Subshell	4f	4f	4f	4f	4f	4f	4f	4f †	4d ‡	4d ‡
Highest Nested Position	S-f/1	S-f/2	S-d/1	S-d/2	S-p/1	S-p/2	S-s/1	S-s/2	S-p/1 ‡	S-p/2 ‡
Actual Ca Resistivity multiple	*16.18*	*11.76*	*5.88*	*3.82*	*47.06**	*2.85*	*1.76*	*2.06 †*	*0.5*	*1.74*
Predicted Calcium multiple	*18.84*	*10.28*	*5.61*	*3.48*	*N/A**	*2.39*	*1.47*	*Not applicable*		

*unexplained anomaly. †neg. ion requires "4d" exchange.   ‡Energy deficient "1s" subshell evacuated.

Calculating Expected Nested-Doublet Resistance to Current Flow in Relation to Calcium as the Index

In the above table, the next to last row is labeled "Actual Ca Resistivity Multiple." This figure is calculated by taking the actual resistivity measurements from the periodic table and dividing the metal conductor resistivity by Calcium's resistivity. It can be seen from the table that the resistivity of the first eight metal conductors are greater than that of Calcium (products of division are greater than "1"). These actually measured figures are to be compared with those in the last row labeled "Predicted Calcium Multiple."

Predicted multiples of Calcium resistivity were made by using the energy additions to subshell electron voltages which doublet nesting requires for extracting and placing electrons within the transition metal's valence subshell. The formula for this is the following:

$$\bar{\mu}^{\pm}_{dblt} = \{\text{nesting eV as a multiple of subshell eV}\} = \left(eV_{nest} + eV_{subshl}\right)/eV_{subshl}$$

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34 This is true by quantum-dimensional mathematics for the move from all "s" subshells across shell boundaries to the lowest order natural doublet contained in the lowest order subshell of the succeeding shell.
35 SOURCE: http://www.webelements.com/periodicity/electrical_resistivity/

Calcium Nesting eV Multiples of Subshell eV

$$\bar{\mu}_{dblt}^{+Ca} = \left(eV_{nest} + eV_{subshl}\right)\Big/eV_{subshl} = (0 + 0.3316\text{ eV})/(0.3316\text{ eV}) = 1$$

$$\bar{\mu}_{dblt}^{-Ca} = \left(eV_{nest} + eV_{subshl}\right)\Big/eV_{subshl} = (0 + 0.3061\text{ eV})/(0.3061\text{ eV}) = 1$$

Predicted Transition Metal Resistivity as a Multiple of Calcium Resistivity

$$\{\text{Predicted trans. metal resistivity as multiple of Ca}\} = y = \left(\bar{\mu}_{dblt}^{+tm}\right)^2 \left(\bar{\mu}_{dblt}^{-tm}\right)^2 \Big/ \left(\bar{\mu}_{dblt}^{+Ca}\right)^2 \left(\bar{\mu}_{dblt}^{-Ca}\right)^2 = \left(\bar{\mu}_{dblt}^{+tm}\right)^2 \left(\bar{\mu}_{dblt}^{-tm}\right)^2 \Big/ (1)^2 (1)^2$$

$$y = \left(\bar{\mu}_{dblt}^{+tm}\right)^2 \left(\bar{\mu}_{dblt}^{-tm}\right)^2$$

An additional electron voltage requirement (by doublet nesting) is placed upon valence subshell eV in order to insert and release electrons during a current flow. This extra nesting eV requirement is a major factor in determining the electrical resistance of the conducting metal. However, the formula for "resistivity," as applied to the Periodic Table of Elements, is Ohms of resistance across a meter squared plane surface as divided by a meter of length. "Resistivity" is not the linear measurement of resistance as used in electrical circuits.

$$\{\text{Resistivity}\} = \rho = R(\text{unit of length})^2 \Big/ (\text{unit of length}) = R(\text{unit of length})$$

Therefore, to calculate transition metal resistivity as a multiple of Calcium resistivity requires that the square of nesting doublet eV increases be used to compensate for the conversion of the "resistance" (measured as a function of voltage upon electrons alone) to that of voltage required to move electrons across a square meter surface area as divided by length. That is, the increased electron voltage required by nesting doublets must not only provide electron flow in the direction of current flow but, must also project at 90° to the direction of current flow, in order to provide an area electron voltage matrix with adjacent atoms as required by the resistivity formula.

Testing the Correlation between Measured and Predicted Resistivity for the Transition Metals

Element	x=Measured Multiple (of Ca Resistivity)	s=x_i-mean	y=Predicted Multiple (of Ca Resistivity)	s=y_i-mean
Sc	16.18	9.14	18.84	11.83
Ti	11.76	4.72	10.28	3.27
V	5.88	-1.16	5.61	-1.4
Cr	3.82	-3.22	3.48	-3.53
Fe	2.85	-4.19	2.39	-4.62
Co	1.76	-5.28	1.47	-5.54
Mean	7.04		7.01	

Pearson Correlation Coefficient=$r_{x,y}$

$$r_{xy} = \frac{\sum\limits_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{(n-1)s_x s_y} = \frac{\sum\limits_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum\limits_{i=1}^{n}(x_i - \bar{x})^2 \sum\limits_{i=1}^{n}(y_i - \bar{y})^2}},$$

$r_{x,y}$=(185.1602)/(188.0952)=0.984396045

Calculation source[36]

One-tailed probability: 0.00019098
Two-tailed probability: 0.00038195

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36 http://www.danielsoper.com/statcalc3/calc.aspx?id=44

The Correlation between Measured and Predicted Resistivity in the Transition Metals

Using the Pearson Correlation Coefficient, it is nearly statistically impossible that the strong correlation between measured resistivity of the transition metals and nested doublet predictions would happen by chance. The correlation would happen by chance only twice in ten thousand trials.

The Pearson Coefficient is well established within the canon of statistical mathematics and, therefore, Pearson tested correlations and their probabilities meet the standards of scientific rigor.

While it is true that correlation does not establish causation[37], it is also true that correlation can identify a causal factor. The correlation between measured and predicted resistivity, as indexed upon Calcium, is strong. By the Pearson formula, a maximum correlation would be "1." The correlation between measured and predicted resistivity in the transition metals was found to be "0.984." As noted, such a strong correlation would occur by chance only twice in ten thousand trials.

A correlation of "1" cannot exist because a direct mathematical relationship does not existed between measured resistivity and the variations in valence eV increases which are imposed by doublet infill patterns.

This lack of a direct mathematical relationship is explained by the difference between "resistivity" and "electrical resistance." "Resistance" is completely an electrical measure using voltage and current flow with a formula of "V=R(I)." "Resistivity" on the other hand, is a measure of resistance across a cross section of a material with a current flow for the length of the cross-sectional unit (see above formula). Resistivity incorporates the characteristics of the material.

The doublet electron-voltage requirements to move electrons in and out of the valence subshell provides an intra atomic resistance measure. It can be made to adapt to the material cross-section by squaring the eV requirements to make a cross-sectional electrical matrix with adjacent atoms set at 90° to the direction of current flow.

However, this adjustment of the intra atomic resistance measure to incorporate a cross sectional matrix, cannot really address the material variable. During current flow, the electrons must jump between adjacent atoms and the ease or difficulty of such jumps is a function of the molecular lattice structure of the material. The resistance of current flow across atomic boundaries is established by lattice molecular structure.

The Correlation proves the Standard/Schrodinger "Metallic Bonding Model[38]" to be in Error

The standard molecular bonding model for the transition metals proposes that metallic cations (positive ions) are surrounded by a cloud of free electrons positioned outside of the atom[39]. It was adopted because the Schrodinger "lobed orbital" and its intra-atom electron probability clouds would not allow for the voltage-driven, constant energy exchanges required to remove electrons from the atom or to place them within the atom during electric current flow. Voltage-driven currents were said to occur through the external electron cloud with no exchange between atoms.

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37 A standard principle in statistical mathematics.

38 The standard metallic bonding model of metal ions swimming in an electron "soup" is based upon the disproved Schrodinger standing wave equation for electrons. See *"Chemical Bonding of a Molecular Transition-Metal Ion in a Crystalline Environment,"* K. H. Johnson and F. C. Smith, Jr. Phys. Rev. B **5**, 831 – Published 1 February 1972. DOI: http://dx.doi.org/10.1103/PhysRevB.5.831

39 The standard/Schrodinger transition metallic bonding model is an "ad hoc" formulation used to integrate transition metal electrical conductance with the Schrodinger atomic model. It seems to have been borrowed from J.J. Thomson's 1904 "plum pudding" model of the electron.
    See: *http://www.britannica.com/EBchecked/topic/593128/Thomson-atomic-model*

The Standard/Schrodinger Metallic Bonding Model cannot account for Electrical Resistance

The problem with the standard/Schrodinger metallic bonding model is that it cannot account for material resistivity and electrical resistance. Why does Calcium, the highest atomic numbered element before the beginning of the transition metals, have a lower resistivity than the first eight transition metals? And why a resistivity pattern for the first seven transition metals relative to Calcium; a pattern which, with one exception, can be statistically correlated with the electron voltage requirements of adding or removing an electron from a metal's valence subshell? That is, why do the electron voltage requirements needed to insert and remove electrons from the atom so highly correlate with resistivity if the electrical current is not composed of jumps between atoms? This correlation far exceeds the scientific standard for significance.

If the standard/Schrodinger metallic bonding model is wrong because resistivity data proves that an electrical current is conducted between metallic atoms and not through a free electron cloud, then what is the correct metallic bonding model? Quantum-dimensional mathematics gives an unexpected answer. Metallic atoms are bonded by electromagnetic fields. These fields are produced by particle spin which occur within unique crystalline patterns provided by the quantum-dimensional geometries of the atom.

Both the nucleus[40] and the electron orbital[41] are "crystal like" in that they incorporate face-like planes in their geometric structures. The "kink planes" of the electron orbital determine the directional characteristics of the magnetic field projected by electron spin[42]. In opposition to the bi-polar magnetic field projected along the surfaces of the "kink planes" is an electrical field projected by the magnetic current of the nucleus[43].

James Maxwell proposed that, when an electrical field intersects a magnetic field at 90°, the intersection produces a flux force with a time variable determined by the speed of light. This has been summarized by Oliver Heaviside's famous equation for the magnetic permeability and electric permittivity of free space.[44] What could never be considered was *"what does this intersection flux force mean if the electrical field is a projection of a magnetic current?"* The magnetic field generated by electron spin upon the "kink planes" of the orbital might try to pressure the intersecting electrical field to align the nuclear plane which is composed as neutron-proton chains conducting the nuclear magnetic current[45]. A 90° field intersection might be achieved by counter field pressure aligning the magnetic circuit within the nuclear plane which originates the electrical field.

However, this realignment of the nuclear plane is not possible for the first twenty elements and their "flat" nuclei[46]. A plane cannot be realigned in three dimensional space from within the two-dimensional plane. It can only be readjusted, relative to three dimensional space, by a "force point" from outside the plane. The transition metals, starting with Scandium, are exactly the point in the Periodic Table where such "outside force points" begin to exist.

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40 For the mathematical description of the the crystalline nucleus see: *Four Dimensional Atomic Structure,* Tab 4, p.p 6-8 *"The Nucleus is a Magnetic Current Circuit and the Structure of the Nucleus is Determined by the Requirements of the Circuit."* Op. Cit.

41 For the mathematical description of the the orbital "kink plane" see: *Four Dimensional Atomic Structure,* Tab 0, *"The Mystical Quantum vs. Quantum-Dimensional Math."* P.p 4-6. Op. Cit.

42 See "*How do we explain this south pole 'force vacuum' using electron orbital motion?"* in **Magnetism and the Quantum-Dimensional Model.**   http://www.srnrl.com/id46.html

43   See the translation in *Four Dimensional Atomic Structure,* Tab 3, p.p. 12-13, of Pierre Curie's 1894 article *" Sur la possibilité d'existence de la conductibilité magnétique et du magnétisme libre (On the possible existence of magnetic conductivity and free magnetism), Séances de la Société Française de Physique (Paris), p76 (1894). (French)."*

44   See *"The Quantum Dimensional Transformation of Heaviside's 'Electric Permittivity' unit of measure"* p.14 http://www.paradigmphysics.com/Quant_Gravity_Model.pdf

45 See APPENDIX for *"A Brief Review of Nuclear Structure, Proton Spin and the Magnetic Current"*

46 *Four Dimensional Atomic Structure,* Tab 4, p. 7, *"THE FIRST TWENTY ELEMENTS."* Op. Cit.

"Outside Force Points" are established by the Element's Proton-to-Neutron Ratio

Element	Nuclear Structure	Atomic Number	Natural Isotope	Ratio Protons to Neutrons
Silicon	flat	14	Si^{28}	1:1(+0)
Phosphorus	flat	15	P^{31}	1:1(+1)
Sulfur	flat	16	S^{32}	1:1(+0)
Chlorine	flat	17	Cl^{35}	1:1(+1)
Argon	Crystalline	18	Noble Gas nuclear aberration	
Potassium	flat	19	K^{39}	1:1(+1)
Calcium	flat	20	Ca^{40}	1:1(+0)
Beginning of Transition Metals				
Scandium	Crystalline	21	Sc^{45}	1:1(+3)
Titanium	Crystalline	22	Ti^{48}	1:1(+4)
Vanadium	Crystalline	23	V^{51}	1:1(+5)
Chromium	Crystalline	24	Cr^{52}	1:1(+4)
Manganese	Crystalline	25	Mn^{55}	1:1(+5)
Iron	Crystalline	26	Fe^{56}	1:1(+4)
Cobalt	Crystalline	27	Co^{59}	1:1(+5)
Nickle	Crystalline	28	Ni^{59}	1:1(+3)

The basic nuclear structure is the triangulated plane[47] made by the intersections of three proton-neutron chains with two chains sharing a common proton at the corners of the triangle. This "flat" structure is necessary to supply a nuclear terminal to the capacitance field being projected to the electrons by the magnetic current.

The first twenty elements in the Periodic Table tend to this flat nucleus with even numbered elements having an equal number of protons and neutrons in their chains and odd number elements having the number of neutrons available to the next higher even numbered element. That is, odd number elements are treated as if they were the next highest even numbered element "*minus* one proton." This pattern of a "1:1" ratio for even numbered elements and "1:1(+1)" for odd numbered elements must be contained within a completely flat nuclear structure.

For a proton to be set outside of the plane, making the chain structure crystalline in form, there must be at least three more neutrons than protons. The initial crystalline structure must approximate a three sided pyramid set at one of the corners of the triangulated flat structure. As can be seen from the above table, a crystalline nuclear pattern begins with the transition metals. The first transition metal, Scandium, has exactly "3" more neutrons than protons to form the corner pyramid.

The crystalline proton set above the flat nuclear plane is attached to three protons in the plane by three neutrons. This crystalline proton receives the motivational force of all the collected "free" proton charges which are being conducted through the chain circuitry. These charges are broadcast by the final crystalline proton to all the electrons in their orbitals. The full force of electron/proton attraction is, therefore, concentrated in the crystalline proton which provides leverage, allowing the crystalline proton to rotate the nuclear plane into an alignment with the highest energy orbital.

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47 See APPENDIX bottom of first page

The greatest leverage force is provided by the electron voltage of the valence shell and it is the valence subshell and/or the highest electron voltage subshell to which the crystalline proton aligns the flat nuclear plane. The nuclear plane is adjusted into the position which is required to achieve a 90° intersection of the nuclear capacitance field with the valence electrons' magnetic field.

Electron orbital geometry is established by the following mechanism. An electron attached to a proton which is falling towards the proton must, at some point, rotate its vector of charge 90° relative to the proton's vector of charge because the electron's volume is partially quantum while the proton's volume is solid and the two cannot occupy the same space.[48] Because the electron's vector of charge is equal in distance to the proton's vector of charge, the orbit established at the point of rotation is composed of six equidistant secants which are kinked into curvature to provide an orbital pathway. An initial orbital plane exists from which the final orbital pathway is "kinked" at 90°. This initial orbital plane, composed by six non-kinked secants within the orbital circle, can be set at 90° to the flat nuclear plane. This intersection of the non-kinked orbital plane and the flat nuclear plane produces an electrical capacitance field at 90° to the magnetic field which is being produced by electron spin from within the kinked planes of the orbital.

Transition metallic bonding consists of aligning the intersecting magnetic and electrical capacitance fields, both horizontally and vertically, to achieve attraction bonds between metallic atoms. The "kink plane" orbital structure provides for both a southern and northern magnetic field projected by electron spin.[49] Horizontal bonding is achieved by aligning the atoms by northern to southern magnetic poles.[50]

The transition metallic atoms are stacked vertically as parallel flat nuclear planes. These parallel nuclear planes project intersecting capacitance fields which have the ability to provide attraction force. Elsewhere I have shown that heat energy storage in capacitance fields projected to the valence subshells have the capacity to provide magnetic field like attraction between atoms.[51]

APPENDIX

A Brief Review of Nuclear Structure, Proton Spin and the Magnetic Current

The spin of the proton and its positive charge can only produce a magnetic current. It cannot project a magnetic field as does electron spin. The charge of the proton is a quantum and a quantum may be defined as an "enforced vacuum." Therefore, the proton's spin and its quantum charge can only produce the "magnetic force vacuum" of the southern pole of the magnetic field. The "force vacuum" southern pole cannot establish a magnetic field. Only the "force projection" northern pole can establish such a field.

Proton spin generates a southern pole magnetic current which, according to the Curie theory of the symmetry between electric and magnetic currents[52], projects an electrical field. For elements with two

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48 *Four Dimensional Atomic Structure,* APPENDIX; *"Four-Dimensional Orbital Structure"* p.p. 4-5. Op. Cit.

49 See "*How do we explain this south pole 'force vacuum' using electron orbital motion?"* in **Magnetism and the Quantum-Dimensional Model.**   http://www.srnrl.com/id46.html

50 This southern to northern pole alignment can be reversed for the ferromagnetic metals (iron, cobalt and nickle) by a strong magnetic field which realigns the atoms south to south and north to north to form a permanent magnet with two permiant poles.

51 See my video *"Part II: The Discovery of an Alterable Nuclear Energy Field"*
    https://www.youtube.com/watch?v=PXUohP67mzA#t=24

52 See the translation in *Four Dimensional Atomic Structure,* Tab 3, p.p. 12-13, of Pierre Curie's 1894 article *" Sur la possibilité d'existence de la conductibilité magnétique et du magnétisme libre (On the possible existence of magnetic conductivity and free magnetism), Séances de la Société Française de Physique (Paris).* Op. Cit.

or more protons in the nucleus, the multiple-spin magnetic currents must be integrated into a circuit. Providing the required magnetic current circuitry is the nuclear function of the neutron.

The neutron is composed as an electron which is embedded in a proton as the inverted quantum squared. The mass of the neutron is the mass of the proton plus 2.53 *times* the mass of the electron. The mathematics governing the inverted quantum squared predicts that the mass of the electron must be increased by at least 2.5 *times* in order to be integrated with the mass of the proton.[53]

The attachment of the electron to the proton as the inverted quantum squared requires that the proton's charge be removed and encapsulated in free space within a shell produced by the inverted quantum-squared electron; a shell which provides mass to the neutron only as long as it is attached.[54] The encapsulated and detached positive charge is spinning within the open-ended shell to provide inductive force to collect all the magnetic currents being produced by all the spinning protons within the nucleus. A chain composed of alternating protons and neutrons is the conduit circuitry for the magnetic current flow.

The current is composed of all the quantum charges of the protons which have been inducted into free space and which are being conducted along the proton-neutron chain. The chain is functioning as a current conduit. While within the current the collected quantum charges from the protons are without motivational force and remain so until they are deposited with the last proton in the circuit from whence they are projected to the electrons in their orbitals.

Because the detached and collected quantum charges constitute a current, they collectively provide a fluid-like pressure against the proton-neutron chain conduit. The current is contained by the spin diameter of the encapsulated free charge of the neutron. Current pressure must slightly enlarge the spin diameter of the spinning encapsulated free charge because the diameter produced by the inverted quantum-squared is exactly equal to the diameter of the facing proton. This condition would plug all current flow. This current pressure slightly increases the diameter of the neutron's free charge spin. It increases the electron multiplication factor from the mathematically determined "2.5 *times*" to the empirically determined "2.53 *times*." The increase gives a space around the shoulder of the facing proton to allow for magnetic current passage.

Current pressure also forces the chain into a straight line. This phenomenon can be seen in flexible water hoses which are often straightened under pressure. The intersection of three chains forms a plane under the geometric principle that two intersecting lines mutually intersecting another line form a triangle located on a single plane. The triangular formulation on a single plane is necessary to align the electric field projected to the electron orbitals by the magnetic current. For heavier elements, these triangular planes are stacked upon one another to retain the field alignment.

The electrical capacitance field projected to the electrons stores energy and the energy stored is the heat signature (from proton frequency of spin) which Curie predicted would accompany a magnetic current. These fields extend far enough that they entangle with nearby atoms[55]. If the stored heat signature of one atom is greater than that of an adjacent atom, then the greater heat signature is transferred to the lesser and back field pressure forces the spin frequency of the cooler atom to equivalence with the spin frequency of the warmer atom. This is the inter atomic heat transfer mechanism.

53 *Four Dimensional Atomic Structure,* Tab 3, p.8, *"PROOF OF THE QUANTUM-DIMENSIONAL NEUTRON: The Mass of the Neutron can be Calculated by the Quantum Geometric Model."* Op. Cit.
54 When the incapsulating particle is stripped from the neutron during solar fusion it becomes the massless neutrino.
55 See video *"Discovery of an Alterable Nuclear Energy Field."* http://www.srnrl.com/id45.html