

2. The Failure of the Schrödinger Model of Electron Orbitals

The energy states of the electron shell/subshell structure was determined by applying the Rydberg distribution of hydrogen light frequencies to Planck's Constant. It is assumed that the hydrogen electron can cycle through the shell/subshells structure— by impetus of light frequencies sympathetic with shell/ subshell standing wave frequencies. These orbital tension-waves of sympathetic frequencies are identified by the Rydberg distribution.

This assumption is allowed by a quantum mathematical principle implicit in the Rydberg distribution . Rydberg' initially used a "constant" in his frequency distribution. This "constant" is really only the inverse of a "root wavelength" ; a "root wavelength" which appears in the spectrograph of the ultraviolet output by hydrogen as "91.143 nm."² Rydberg's distribution formula is actually the negation of (quantum-squared) subdivision³ from this root frequency. All "subshells" are actually quantum negations of a subdivision of the root:

The Rydberg Formulation of the Atomic Shell/ Subshell Structure

$$n = \text{subdivision}; \quad n' = \text{negation}; \quad Q_r^2 = (\text{root quantum - squared radial})$$

$$Q_r^2 = 8.2935951845e-16 \text{ m}^2 \quad \{\text{by quantum - dimensional calculations}\}$$

$$\lambda_r = \text{root wavelength} = 91.143 \text{ nm}; \quad c / \lambda_r = \text{root frequency} = 3.289253788e15 \text{ Hz.}$$

$$\left(\text{subshell } Q^2 \text{ radial}\right) = \left(\frac{1}{n^2} - \frac{1}{n'^2}\right)Q^2; \quad \left(\text{subshell frequency}\right) = f_{\text{sub.}} = \left(\frac{1}{n^2} - \frac{1}{n'^2}\right)\frac{c}{\lambda_r}$$

$$\left(\text{subshell electron volts}\right) = \frac{f_{\text{sub.}}(h)}{e}; \quad h = \text{Planck's Constant}; \quad e = \text{elementary charge}$$

By recognizing the Rydberg formulation as a quantum harmonic distribution from a root frequency— which also identifies quantum-squared orbital distances— we can develop an exact table of electron voltages for the shell/subshell orbitals.

Table of Shell/Subshell Electron Voltages							
Shell "n" $eV = \frac{13.6033}{n^2}$	Subshell "n' " $eV = \left(\frac{1}{n^2} - \frac{1}{n'^2}\right)13.6033$						
Shells Low=1; n=7 High=7; n=1 n; elec. Volts	subshells "s" n'=8 Cap.= 2 elec. Vlt.	subshells "p" n'=7 Cap.= 4 elec. Vlt.	subshells "d" n'=6 Cap.= 6 elec. Vlt.	subshells "f" n'=5 Cap.= 8 elec. Vlt.	subshells "g" n'=4 Cap.= 10 elec. Vlt.	subshells "h" n'=3 Cap.= 12 elec. Vlt.	subshells "i" n'=2 Cap.= 14 elec. Vlt.
n=1; 13.6033 eV	13.3907	13.3256	13.2254	13.0591	12.7531	12.0918	10.2025
n=2; 3.4001 eV	3.1883	3.1232	3.0229	2.8567	2.5506	1.8893	
n=3; 1.5115 eV	1.2989	1.2339	1.1336	0.9673	0.6613		
n=4; 0.8502 eV	0.6377	0.5726	0.4723	0.3061*			
n=5; 0.5441 eV	0.3316*	0.2665	0.1663	*An anomaly. The higher "4f" subshell (in Brackett shell) has less eV than the lower "3s" subshell (in Pfund shell).			
n=6; 0.3779 eV	0.1653	0.1003					
n=7; 0.2776 eV	-0.0651	insufficient energy					

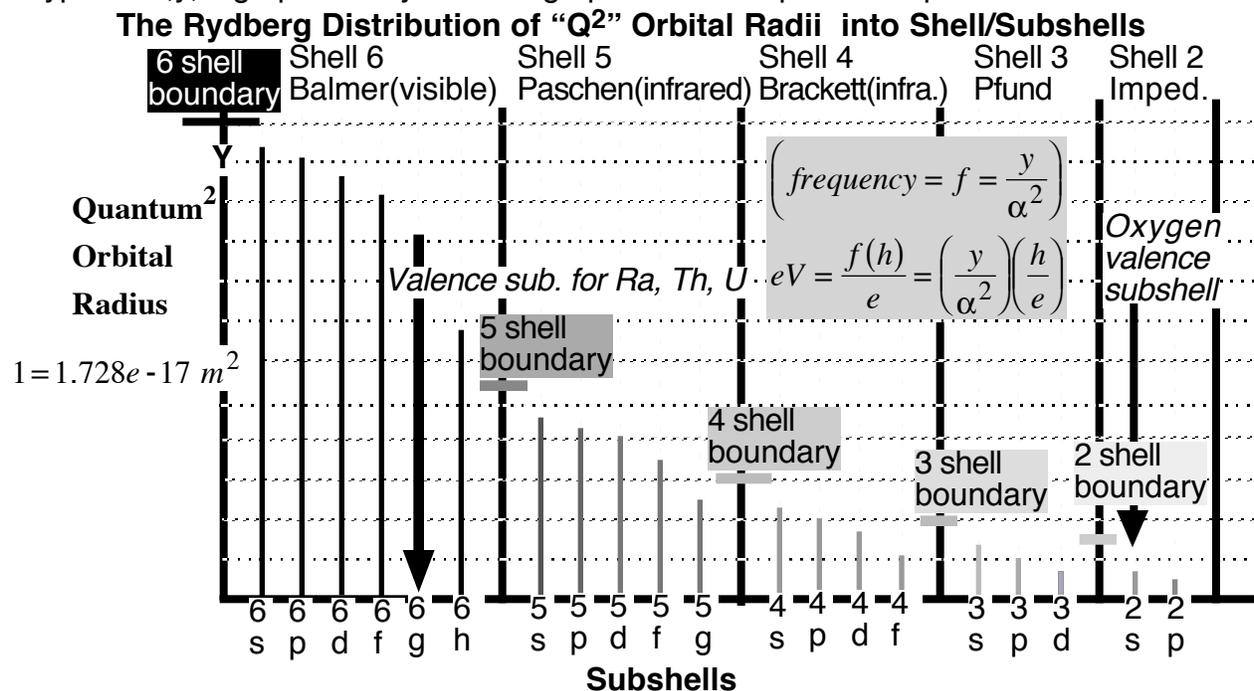
We can illustrate the shell/ subshell orbitals as relative (quantum squared) radial distances. A

¹ See "The Conversion of Rydberg and Balmer Constants to Root Wavelength" p. 307 in the *Quantum Dimension*; Dawson, Lawrence; Paradigm Publishing. 2009 www.paradigmphysics.com.

² See Tab 1, "Revealing Actual Quantum Mechanics through Quantum-Dimensional Mathematics" p. 6

³ "The Quantum Dimension" for the concept of "negation of subdivision" see p.9 and forward.

note of warning is in order, however. These are not two dimensional orbits in three dimensional space, as with planetary systems. They are quantum three dimensional orbitals in four dimensional space and cannot be plotted with conventional cartesian coordinates on a typical "x,y,z" graph⁴. They must be graphed as the "quantum squared."



Scientists who are ignorant of four-dimensional quantum geometry will condemn this electron voltage distribution into subshells, although they offer no alternative. They have confused themselves about the relationship between orbital distance, electron voltage and associated light frequency. They believe that the very concept of "orbital radius" is indeterminate as the orbitals are considered to be probability clouds of distances at which the electron might be found, electron distances being subject to the "uncertainty principle."

The Hypothesized Schrödinger "Eigenfunction Orbital⁵" for the "d" Subshell

Figure 1



Electron "d" orbitals proposed by Schrödinger's Hamiltonian wave-function as converted by an eigenfunction to produces a cloud of probability points for electron position. The purpose of this paper is to identify the elements of atomic structure which govern ionization and molecular bonding. The easiest way to do this would be to outline the proposed structure with its applications and supporting data without regard for the system

⁴For the graphic distinction, see illustration of page 11 of "The Quantum Dimension." Op. cit.

⁵ Quantum Numbers to Periodic Tables: The Electronic Struct. of Atoms: The Chemogenesis Web Book

of unproved speculations which is the primitive quantum mechanical model of atomic structure. Unfortunately, a complete disregard of primitive quantum mechanics is not possible because primitive quantum mechanics have been incorporated into the currently accepted periodic table of elements.

The illustration of the Schrödinger “lobed orbitals” in Figure 1 has been proposed as identifying the number of electrons which can be absorbed by a “d” subshell and has been incorporated into the periodic table of elements for this purpose.

The four lobed orbitals are produced using Schrödinger’s wave-function converted to three-dimensions by an eigenfunction and multiplied by an alleged “quantum angular moment number.” Each lobed orbital is a cloud emanating from the nucleus at the angular moment determined by the first linear Hamiltonian solution to Schrodinger’s nonlinear “standing wave function” for the orbital. The angular moment number determines the number of sets of lobed orbitals; one set for each value. The value for the “d” subshell is “2.” Therefore, the “d” subshell has “2” sets of lobed orbitals as illustrated.

Each lobed orbital is proposed as a distinct orbit which can contain “2” electrons, by the Pauli exclusion principle⁶. Since each angular moment value provides a set of lobed orbitals, The Schrödinger formula for the electron capacity of any subshell is the following:

$$\text{Schrodinger Subshell Electron Capacity} = 2 + \ell(2^{\ell}); \quad \ell = \text{angular moment number of subshell}$$

$$\ell = 8 - n' = (\text{distance from "s" subshell}); \quad n' = \text{subshell number}; \quad 8 = \text{"s" subshell number}$$

Unfortunately, the Schrödinger “lobed orbital” doesn’t exist in physical reality. The Schrödinger “lobed orbital” is a misidentification of the geometric form which the first Hamiltonian solution to his wave-function provided. Schrodinger’s first Hamiltonian graphs what modern mathematics has identified as the graph of a tensioned string oscillator; a graph which Schrodinger could not recognize because the graph and its tension mathematics were still 80 years in the future⁷. He misidentified the graph as the “shape” of the orbital. The angular moment number for Schrodinger’s misidentified “orbital shape” only works from its accidental relationship to the quantum subshell number, “n’.”

The capacities of subshells to accommodate differing numbers of electrons actually has a completely different explanation than that provided by Schrodinger. The real explanation is not merely “theoretical speculation,” but is one supported by hard data.

The splitting of the “6h”, 656.3 nm hydrogen spectral line into a set of doublets offset by “±0.016 nm” shows that each subshell orbital can split into two, slightly offset orbitals which can accommodate an additional electron. An exact quantum-dimensional formula mathematically derives the “6h” doublets as a function of the primary electron voltage and an anomalous magnetic moment of electron spin.⁸

Further, the electron voltage table shows that doublets can be nested to provide additional doublets for descending subshells. More “nested doublets” furnish higher electron capacities to descending subshells. A formula for subshell electron capacity has thus been produced which is based upon the number of nested doublets available to a specific subshell. This formula has been confirmed by the Zeeman effect for the sodium D-lines.⁸

⁶ See “Sodium D-Lines: Establishing Four-Dimensional Structure over Bohr/Schrodinger” p. 36 and forward in *The Quantum Dimension*. Op. cit.

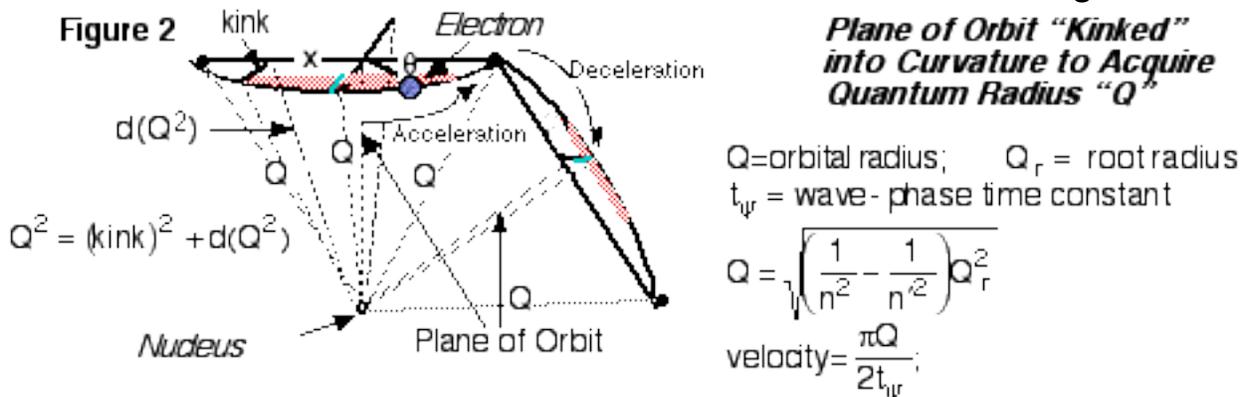
⁷ See Tab 1, p. 8 “Standing Waves as Tension-Waves of Constant Frequencies”

⁸ Tab 1-A; p.p. 1-6.

Erwin Schrödinger's proposed that orbits of electrons must contain a whole number of "standing waves" in order to explain their light emission characteristics.⁹ Schrödinger intuitively realized that any "standing wave" contained within electron orbitals could not be contained within the two-dimensional plane of a conventional orbit. He intuitively and correctly concluded that the standing wave contained within the orbital must be transverse to the plane of orbit. This is the reason that he converted the two-dimensional graphic from his Hamiltonian equation for the standing wave to a three-dimensional form using an eigenfunction.

Schrödinger's concept of a transverse standing wave contained within an electron's orbit was intuitively sound, even if his mathematics ultimately proved deficient. It is the quantum-dimensional model which produces Schrödinger's intuitively induced transverse standing wave. The transverse "standing wave" has proved to be acceleration/deceleration phases across transverse planes which compose a three-dimensional wave in four dimensional quantum space¹⁰ :

The Correct Quantum Mechanics of the Orbital's Internal Standing Wave



Quantum tension can produce a "string-like" acceleration/deceleration phase within the orbital wave to output light energy— it is a standing wave.

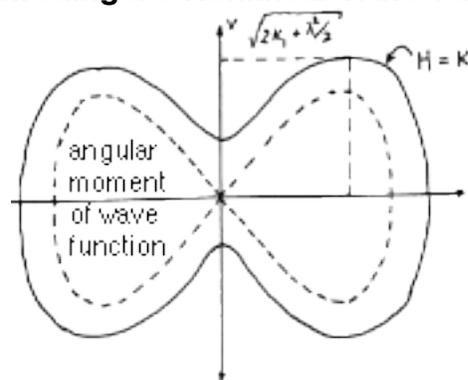
Without going into precise mathematical detail, the Schrödinger standing wave formula is a nonlinear equation which is given linear solution as a Hamiltonian transformation.

The Linear Hamiltonian Solution to Schrödinger's Nonlinear Wave-Function¹¹

Schrodinger's Hamiltonian Wave Function

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

Level curve $H=K_j$ of Hamiltonian



1. The nonlinear equation shows that the derivative of a Planck-defined wave function— by its time value (the inverse of its frequency)— produces a calculable operator

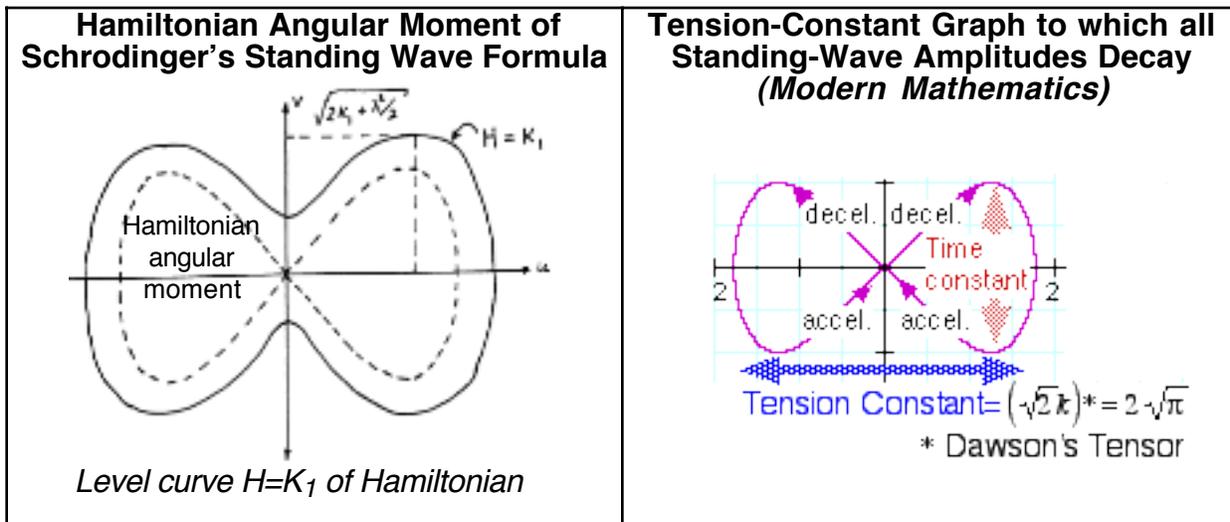
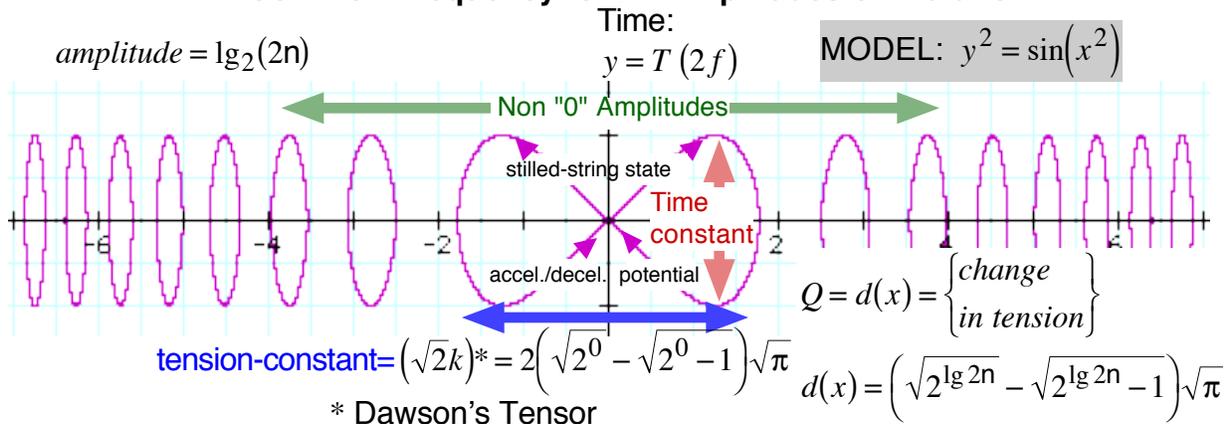
⁹ Mackiev's World Book; 2005 edition.

¹⁰ *The Quantum Dimension*; see p. 11 and forward. Op. cit.

¹¹ *The Geometry of Nonlinear Schrödinger Standing Waves*; Newton, Paul and Watanabe, Shinya ; IMA Preprint Series; Aug. 1991; Dept. of Mathematics, University of Illinois, Urbana.

for the wave, the Hamiltonian. 2. The Hamiltonian graph of the Schrödinger standing wave is the exact graph of the Euclidean tension-wave. As a graph, it is given in two-dimensions. To this "flat" version of his wave equation he incorporated the idea of an "eigenfunction of an oscillating membrane." Orbital subshell numbers became his "quantum angular momentum numbers" which determined the number of sets of his tension-wave graph which he then converted by Eigenfunction to three dimensions to produce his supposed "lobed orbitals."

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



Schrödinger's "angular momentum number" is the number of separate Hamiltonian angular moments, each one of which produces a separate tension-constant graph. The number of Hamiltonian angular moments produces an equal number of tension-wave graphs which Schrodinger mistook for "lobed orbitals." Schrödinger's formula for the number of Hamiltonian angular moments was arrived at by numbering each descending subshell starting with "0" for the highest "s" subshell. This formula for the number of Hamiltonian angular moments per subshell coincides with the number of nested doublets per subshell.

For example, the "d" subshell is the third in the series which provides it with a Schrödinger "angular momentum number" of "2." Two Hamiltonian angular moments produce two tension-wave graphs which Schrodinger mistook for "4" lobed orbitals (See Figure 1, p. 2). By quantum-dimensional mathematics, the "d" subshell can nest "2" doublets¹² which

¹² See Tab 1-A, p. 3.

coincidentally equal the number of Hamiltonian tension-constant graphs which are produced for the subshell by Schrödinger's "angular momentum number."

On the surface, Schrodinger's angular momentum number is suspect. His "angular moment" is only the graphing parameter of his Hamiltonian equation for the internal standing wave. He attaches a number of such parameters and their resultant graphs to subshells without apparent justification. Since the number of graphing parameters for the "s" subshell has been arbitrarily set at "0," the "s" subshell can not even have an internal standing wave.

The Erroneous Schrodinger Formula for Subshell Infill

The Schrodinger "angular momentum number" is the number of Hamiltonian graphing parameters, each graph containing "2 lobes." Subshells are assigned "angular moment numbers" in descending order (see table below)

$$\ell = \{ \text{angular moment number (num. graphing parameters)} \}; \quad 2\ell = \{ \text{number of lobes} \}$$

Each lobe can contain "2" electrons by Pauli exclusion principle

$$\{ \text{Electrons available by lobes} \} = 2(2\ell); \quad \text{Must add electrons from initial orbit}$$

$$\{ \text{initial orbit electrons} \} = 2;$$

$$\{ \text{Erroneous Schrodinger formula for infill} \} = 2 + 2(2\ell)$$

The Correct Formula for Subshell Infill

A doublet identifies 2 offset orbitals which have a total capacity for 2 electrons. Each subshell contains a natural doublet supplied by orbital electron voltage and the anomalous magnetic moment of electron spin. This is confirmed mathematically and empirically by the naturally occurring "6h" doublet in the hydrogen spectrograph. To these natural doublets must be added the number of nested doublets as provided by electron voltage pressure across the shell to the subshell.

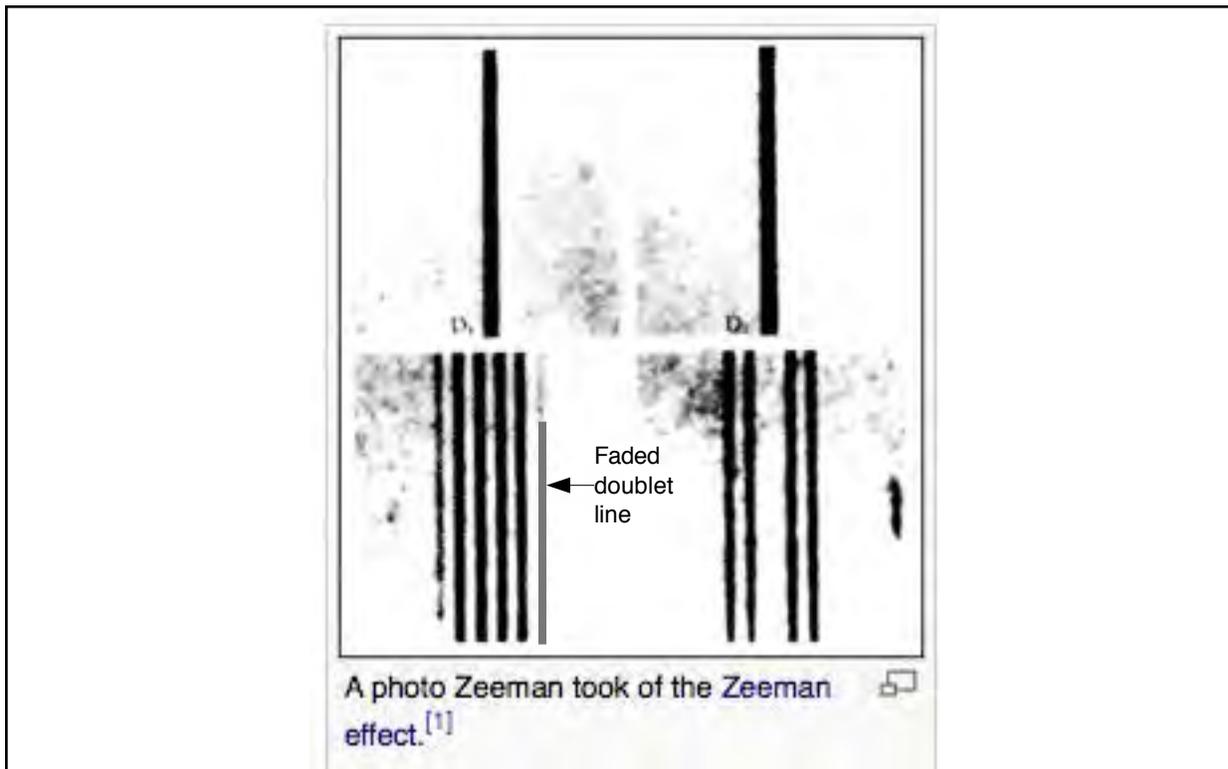
$$\ell = \{ \text{number of nested doublets} \} \quad \left\{ \begin{array}{l} \text{by coincidence between quantum-dimensional} \\ \text{model and Schrodinger model} \end{array} \right\}$$

$$\{ \text{natural doublet capacity} \} = 2; \quad \{ \text{nested doublet capacity} \} = 2(\ell)$$

$$\{ \text{Correct formula for infill} \} = \{ \text{natural doublet capacity} \} + \{ \text{nested doublet capacity} \} = 2 + 2(\ell)$$

Subshell label	ℓ	Max electrons	Shells containing it	Historical name
s	0	Schrod. error: 2 Correct Number: 4	Every shell	sharp
p	1	6	2nd shell and higher	principal
d	2	10	3rd shell and higher	diffuse
f	3	14	4th shell and higher	fundamental
g	4	18	5th shell and higher	
h	5	22	6th shell and higher	
i	6	26	7th shell and higher	

Proof that Subshell Electron Distribution is by Doublets and Not by Misidentified Orbital “Lobes”: The Zeeman Effect upon the Sodium “D” Lines



[1] <http://www.chemteam.info/Chem-History/Zee-man-effect.html>

“In 1896,..... [Pieter Zeeman] disobeyed the direct orders of his supervisor and used laboratory equipment to measure the splitting of spectral lines by a strong magnetic field. He was fired for his efforts, but he was later vindicated: he won the 1902 Nobel Prize in Physics for the discovery of what has now become known as the Zeeman effect”.

The above photo is the actual data recording which won Zeeman the 1902 Nobel Prize. It shows that the spectral “D lines” output by glowing sodium could be further split by a magnetic field.

Sodium D-Lines

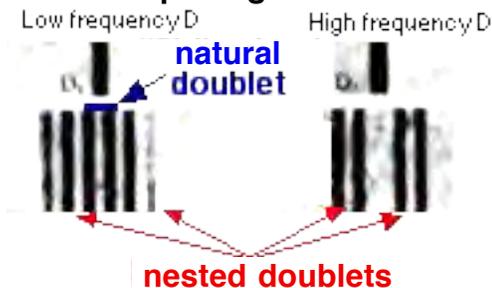
 <p>Doublets = (589.2937±0.2985) nm</p>	<p>D-line Change in Electron Voltage $\Delta eV_{dbl} = 0.0010651906 \text{ eV}$</p>
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At “ 589.2937±0.2985 nm, ” the natural D-lines light doublet for sodium lie between the “6g” subshell (with a tension-wave frequency sympathetic with “486.096 nm” light) and the “6h” subshell (with a tension-wave frequency sympathetic with “656.23 nm” light). The D-lines reside at approximately “1/ 3” the distance between the “6h” and the “6g” subshells (at 34.1% of the distance). Zeeman data shows that his magnetic field forced the higher frequency “D line” into two nested doublets and the lower frequency “D line” into an

¹³ http://en.wikipedia.org/wiki/Pieter_Zeeman#cite_note-1

equivalent two nested doublets with the addition of the lower “D-line” also being split into a natural doublet .

Zeeman Splitting of Sodium D-Lines into Additional Doublets



•An annotation of Zeeman original spectrographic photo.

The Zeeman Modification of the Sodium D-Lines Proves Orbital Infill Model

Zeeman further splitting of sodium D-lines by a magnetic field shows that the “low frequency” D-line (589.6 nm) produces a natural doublet plus two nested doublets (making three doublets). The “high frequency” D-line (589.0 nm) produces another two nested doublets. The Zeeman splitting duplicates the actual infill process. The lower frequency D line is of lower energy than the higher frequency D line. The Zeeman field multiplies the lower energy D line into a natural doublet and the first two lower-energy nested doublets. The Zeeman field multiplies the high energy D line into the two higher energy nested doublets.

The total of one natural doublet plus four nested doublets identifies the subshell capacity of the “6g” subshell; the subshell towards which a “stuck” electron is inclining. The energy applied against the “stuck” electron is trying to force it into the “6g” subshell and is causing light output as the D lines. By the formula and table on page 6, it can be seen that the “6g” subshell has a capacity of “10 electrons.” The Zeeman modification of the sodium D-lines identifies the subshell capacity of the subshell orbital towards which a “D-line” electron is inclining— but to which it has been denied access.

The D-line electron is inclining towards the “6g” subshell from the “6h” subshell. The “6g” subshell has a capacity of “10” electrons from a natural doublet (2 electrons) and “4” nested doublets (8 electrons). This electron distribution into the “6g” is exactly what the Zeeman multiplication of the D-lines showed to be the case.

When taken in conjunction with the fact that sodium has a total of “11” electrons, the Zeeman multiplication proves that “10” of those electrons are residing in the “6g” and that the “D” spectrographic lines are being emitted by the eleventh and last electron which is seeking access to the “6g,” an access which is being denied because the “6g” is filled to capacity¹⁴ .

The Origin of the Sodium “D-Lines”

The sodium D-lines— wavelength “589.2937±0.2985 nm”— resides between the wavelengths of the “6g” subshell (486.1 nm) and the “6h” subshell (656.3 nm). The electron voltages of the “D-line” light emissions are determined by frequency and Planck’s constant:

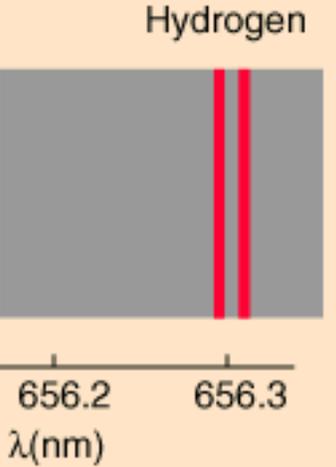
$$eV = \frac{f(h)}{e} = \frac{c(h)}{\lambda(e)}; \quad f = \text{frequency} = \frac{c}{\lambda}; \quad e = \text{elementary charge}; \quad h = \text{Planck's constant}$$

$$\Delta eV = \frac{c(h)}{(589.2937nm)(e)} - \frac{c(h)}{(589.5922nm)(e)} = 2.1039465496 - 2.102881359 = 0.0010651906 \text{ eV}$$

¹⁴ See Tab 1-A, p. 3 for the full explanation of subshell capacities.

The quantum dimensional model of the electron orbital has derived an exact formula for the naturally occurring “6h” doublets found in the spectrograph for hydrogen¹⁵. That formula demonstrates that the “6h” hydrogen doublet is caused by the magnetic moment of electron spin- as modified by a declination in axis of spin across adjacent wave planes:

Naturally Occurring Doublets in the “6h” Hydrogen Spectrograph¹⁶

 <p style="text-align: center;">Hydrogen</p> <p style="text-align: center;">656.2 656.3</p> <p style="text-align: center;">λ(nm)</p>	<p>The variance in wavelength for the hyperfine doublets calculates to a variance in electron voltage of ±0.000046 eV.</p> <p style="text-align: center;">Derived Formula for Doublet eV.</p> $(1 + \ddot{\gamma}) eV_{half-spin} = \textit{anomalous magnetic moment}$ $\frac{(+\Delta eV_{db})^2 (-\Delta eV_{db})^2}{eV_{6h}^2} = (1 + \ddot{\gamma}) eV_{half-spin} = 1.260587 \cdot 10^{-18} \text{ eV}$ $\Delta eV_{db} = \sqrt[4]{(6h)eV^2 (1.260587 \cdot 10^{-18} \text{ eV})} = 0.0000460568 \text{ eV}$ <p style="text-align: center;"><i>Formula derives empirical measurement.</i></p>
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This formula for the naturally occurring “6h” hydrogen doublet applies to all naturally occurring doublets. When we apply the formula to the empirically-derived “change in eV” for the sodium “D lines” (±0.001065 eV) we can calculate an electron voltage for the D-line orbital.

$$\pm \Delta eV_{db} = \pm 0.0010651906 \text{ eV} = \sqrt[4]{eV_{D-ln}^2 (1.260587 \cdot 10^{-18} \text{ eV})}$$

$$\frac{0.0010651906 \text{ eV}}{\sqrt[4]{(1.260587 \cdot 10^{-18} \text{ eV})}} = \sqrt{eV_{D-ln}}; \quad eV_{D-ln} = 5.638 \text{ eV}$$

Why the “D-line” electron voltage is greater than natural orbital eV

The naturally occurring sodium D-lines identify an electron voltage of “5.638 eV” for the eleventh sodium electron which is inclining towards but not able to enter the “6g” subshell. This energy supplied the D-line electron by the nucleus is over twice that required to place the electron in the "6g." The D-lines eV, as calculated from the doublets (5.638 eV), is 2.21 *times* that required to place an electron in the "6g" (2.551 eV). That is, the nucleus tries to force the eleventh electron into the "6g" by applying excessive energy. When that excessive energy reaches 2.21 times the destination orbital, the doublet occurs.

Understanding why the D-line electron voltage may be greater than the next higher proper orbital electron voltage requires knowledge of how orbital electron voltage is assigned. The energy for proper orbitals is supplied by orbital position, not the nucleus. Proper orbitals are the negations of subdivisions from the root orbital. Energy is mathematically supplied by the tensions establishing the orbitals standing wave frequency. No nuclear energy is required to "park" an electron in these proper orbitals. The orbital energy which establishes the electron's velocity is self sustaining.

In contrast, non-quantum orbital positions between the proper shell/subshell orbitals require

¹⁵ See Tab 1-A, p.p. 5-6.

¹⁶ *Hydrogen Fine Structure* , hyperphysics.phy-astr.gsu.edu/Hbase/quantum/hydfin.html#c1

a continuous investment of nuclear energy to sustain. The sodium "D-line" electron occupies such a non-quantum orbital with energy invested from the nucleus to sustain the position. Energy is increased in an attempt to overcome "6g" blockage until light is output as a doublet.

Energy is stored in electron capacitance fields as a heat signature from the nucleus¹⁷. This field-energy is a continuum of temperatures, as provided by the frequency of proton spin¹⁸. The management of this stored nuclear energy differs between quantum and non-quantum orbitals. For quantum orbitals and their exact quantum electron voltages, changes in nuclear stored energy can only be addressed by adjustments in charge¹⁹:

$$eV_Q = \text{quantum electron voltage fixed by orbital}; \quad \text{Field - Energy} = (\text{charge})(\text{voltage})$$

$$\text{change in field energy} = \Delta E = \Delta e (eV_Q)$$

Changes in nuclear energy stored in a proper orbital capacitance field must change the charge of the field, because it cannot change the voltage of the field. This results in a field-charge which may be greater or less than the elementary charge possessed by the orbital electron. This fact has been empirically proved by manipulations of the charges stored in the fields of the hydrogen bonds of some hydrocarbons. The field charges of the hydrogen bonds of polyvinyl film, as measured by an oscilloscope, were increased by infusion of a small amount of friction heat. This increase in charge was accomplished without the acquisition of electrons by the film. Further, when the film was discharged— as confirmed by the oscilloscope— the loss of the film's friction heat could be measured²⁰.

Deficiencies in field charge due to insufficient energy stored in quantum capacitance fields have also been documented. David Rule's discovery of a negative radiation heat exchanger operates by this principle. Uniformly dropping the temperatures of tank walls— walls which have been formed by a hydrocarbon— forces the bonds of the hydrocarbon to deficiencies in charge relative to the bonding electron's elementary charge. The electron drops out of the quantum orbit and into non-quantum shell boundary orbits in order to make the voltage adjustments necessary to bring field charge into conformity with the electron's elementary charge²¹. It releases negative radiation frequencies in the process.

Rule discovered that the drop into non quantum orbits adjusts to stored temperature energies in the capacitance field by making electron voltage changes while keeping charge constant:

$$eV_{nonQ} = \text{non - quantum electron voltage of non - quantum orbital}; \quad \Delta E_{nonQ} = (\Delta e V_{nonQ})(e)$$

This has application to the sodium D-lines. Nuclear energy is attempting to migrate the eleventh sodium electron from the "6h" subshell to the "6g." However, the "6g" is filled to capacity with 10 electrons and is resisting the migration with a combined electron voltage of "25.51 eV" (10 times "6g" eV of 2.551 eV). At a non-quantum orbital distance of "2.104 eV" the migration is halted. The resistance eV is 12.1 times the migration eV. The subshell of origin, the "6h" had a 12 electron charge capacity and is supplying that motivational force

¹⁷ See Tab 4, "Spinning Protons create Magnetic Currents at Frequency and the Frequency of Spin Generates Heat which is Stored in Electron Capacitance Fields" p.p. 16-22

¹⁸ Ibid.

¹⁹ There is a difference in the management of stored field energy between valence electrons freely moving through quantum orbitals and electrons fixed in quantum orbitals. However that discussion is an unwarranted digression at the present.

²⁰ For a video record of this experiment, see "The Quantum Dimension and the Discovery of an Alterable Nuclear Energy Field" <https://www.youtube.com/watch?v=PXUohP67mzA>

²¹ See forward to this book.

to the migrating electron. The "D-lines" non-quantum orbital distance is determined by the relative charge capacities of the "6h" and "6g" subshells. The migrating eleventh electron is "stuck" at an eV as determined by the 12 charges of the originating "6h."

Although the "D-lines" non-quantum orbital is restricted by charge, it is not restricted by electron voltage. The energy supplied to the non-quantum orbital capacitance field by the nucleus can increase the electron voltage. When the electron voltage supplied by the nucleus is increased from "2.104 eV" to "5.638 eV" the "D-lines" light doublets appears.

However, the electron voltage of the non-quantum "D-lines" orbital is still insufficient to overcome the eV resistance from the 10 electrons stationed in the "6g" subshell. The combined electron voltages of the 10 electrons from the "6g," towards which the eleventh electron is inclining, is still 4.52 *times* greater than the modified electron voltage of the "D-lines" non-quantum orbital.

Zeeman Effect explained by eV multiplication capacity of non-quantum orbitals

The Zeeman multiplications of the sodium D-lines by an applied magnetic field may be understood using conventional electronics theory. A magnetic field is an induction field which provokes an electric current in a wire coil. That is, the magnetic field applies voltage to the wire coil, a voltage which the coil does not possess outside the magnetic field. The magnetic field induces voltage.

Similarly, a Zeeman magnetic field can induce a further voltage increase for the non-quantum "D-lines" orbital. If that field induced voltage increase is greater than 4.52 *times*, then the "D-lines" electron in its non-quantum orbital can overcome the eV resistance from the ten electrons in the "6g." The doublet structure of the "6g" can be duplicated for the D-lines orbital converted the doublet into 5 doublets to accommodate 10 electrons. An exchange between the 10 electrons in the "6g" and the eleventh electron in the "D-lines" orbital. The Zeeman multiplication of the the original "2" D-lines to "10" demonstrates the possibility that the 10 electrons in the "6g" have been exchanged for the one electron residing in the original "D-lines" orbital.

Quantum Dimensional Model of Subshell Electron Infill is Established.

Because the Zeeman multiplication of the D-lines duplicates the 10 electron capacity of the "6g" subshell and because quantum mathematics provides an exact explanation of the D-lines and the Zeeman effect, the quantum dimensional model of electron subshell infill and its explanation has to be accepted as factually established.