

<http://zhydrogen.com>

Website created by Jeff Driscoll and is a beginner's guide to Blacklight Power and Randell Mills's theory of the atom.

**My goal for creating the website:**

Attract funding to replicate and license Blacklight Power's technology.

I am not affiliated with Blacklight Power in any way.

# Blacklight Power Claims / Facts

## **Blacklight Power**

- Claims to have found a new way of producing energy from Hydrogen that would result in home heaters that have little or no fuel costs.
- Has spent more than \$80 million over the past 20 years on their energy technology.
- Has numerous (80+) published scientific papers and books on their theory.
- Blacklight Power has a technology that is safe and 100% green where the average yearly cost to power a house would be a fraction of what it is now (only “pollution” is hydrino gas which is non-toxic in small quantities).
- Claims newest discovery, CIHT (Catalyst Induced Hydrino Transition), generates electricity without producing thermal energy.

## Notable **current and former** board of directors at Blacklight Power

**Shelby T. Brewer** - Board of directors and V.P. from 1997 to 2000

- Top nuclear official in Reagan administration
- CEO of ABB Combustion nuclear power business unit for 10 years (1985 – 1995)
- Became CEO of BLP owned subsidiary Commodore Applied Technologies in 2000 which, since the mid 1980's, has specialized in mixing Sodium (Na) with Ammonia (NH<sub>3</sub>) to break down toxic chemicals such as PCB's. This is the **exact same** chemicals advocated by Randy Mills.

**Michael Jordan** - Board of Directors 2004-2010

- former CEO of Westinghouse Electronics and Electronic Data Systems and CBS.

**George Sawyer** - Board of Directors 1996 - current

- Assistant Secretary of the Navy under Reagan
- Founding partner of large private equity company named J.F. Lehman.

**Michael Kalleres** - Board of Directors 1999 - ?

- Retired commander US Second Fleet in the Atlantic/NATO and former member of the Defense Science Board. Also on BoD at Commodore Applied Technologies

**Merrill A. McPeak** – Board of Directors 2003 - ?

- former Chief of Staff of the U.S. Air Force

**Neil Moskowitz** - Board of Directors 2005-?

- CFO Credit Suisse First Boston, spent 10 years at Goldman Sachs

**James Lenehan** – Board of Directors 2009-?

Former President of Johnson and Johnson (Fortune 500 company)

**James K. Sims** – Board of Directors 2009 – present

Founder of Cambridge Technology Partners leading it to \$625 million in annual revenue, founder of Concurrent Computer Corp that was built into \$340 million annual revenue.

Founder of Gen3 Corp which has confirmed some of BLP's thermal experiments – report found here:

[http://www.blacklightpower.com/pdf/GEN3\\_SolidFuel.pdf](http://www.blacklightpower.com/pdf/GEN3_SolidFuel.pdf) (2009)

Also, Gen3 Corp. oversaw a study done by Harvard Smithsonian Center for Astrophysics that confirmed a BLP X-ray continuum radiation experiment. Report found here:

<http://blacklightpower.com/papers/SoftXray.pdf> (2010)

Other notables:

**Randy Booker**, physics professor from University of North Carolina, in 2005 was asked by Greenpeace to investigate BLP's claims and gave a positive review. He now says on his website that one of the many things he studies is “new energy sources based on hydrogen technology”.

# Claims

- Electron in the Hydrogen atom falls to a lower orbit than was previously thought possible and becomes what they term a “hydrino”.
- Hydrogen turns into a hydrino under certain conditions and releases useable heat energy.
- Creation of hydrino releases 200 times more energy than that required to produce Hydrogen from splitting water into Hydrogen and Oxygen.
- One method of creating hydrino is to have Hydrogen in contact with Potassium or Sodium at high temperatures (300 C or higher) during a solid to gaseous phase transition.
- Claims that dark matter, which makes up 80% of all matter in the Universe is actually hydrinos.
- Standard Quantum Mechanics (SQM) has many problems that are solved with Randell Mills’s Classical Quantum Mechanics (CQM).

Example of one of BLP's experiments:

A mixture of Sodium Hydroxide (NaOH) and Nickel heated releases more energy out than can be explained by conventional chemistry.

Output energy = 2149 kJ

Input energy (electric heater) = 1396 kJ

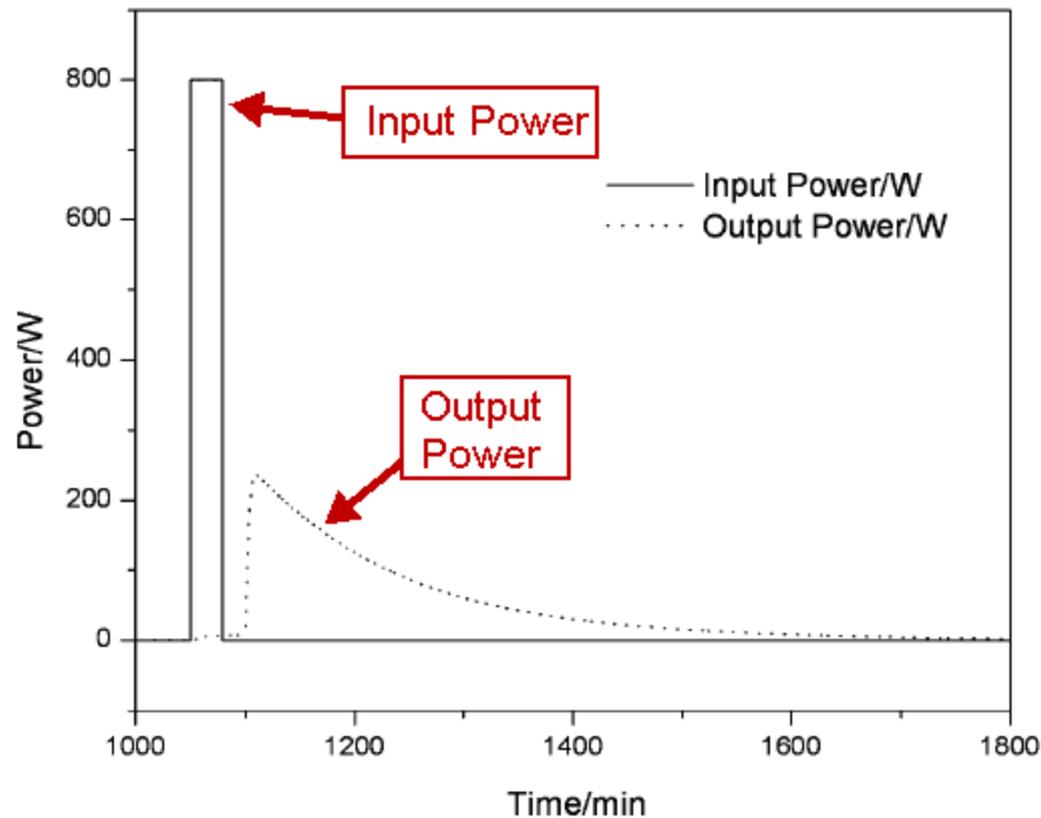
Excess energy = 753 kJ (because  $2149 - 1396 = 753$ )

Conventional chemistry explains a negligible amount of this 753 kJ.

Less than 1% of Hydrogen was converted into hydrinos in this experiment. Since Sodium and Hydrogen are separated in the experiment, the material is "regenerated" back to Sodium Hydroxide and Nickel to be reused to make more energy. In a large scale power plant, energy needed for this "regeneration" comes from subsequent creation of hydrinos in later power cycles.

Energy released from 1 kg of NaOH doped Raney Nickel equaled 753 kJ. Plot of input power and output power.

Figure 22. The coolant power with time for the hydriano reaction with the scale-up cell containing the reagents comprising the catalyst material, 1kg NaOH -doped R-Ni 2400. The numerical integration of the input and output power curves with the calibration correction applied yielded an output energy of 2149.1 kJ and an input energy of 1396 kJ corresponding to an excess energy of 753.1 kJ.



Typical power output versus input.

## Hydrino creation

In a Hydrogen atom, electron falls to a lower orbit state previously unknown, releasing thermal and electromagnetic energy and forming a hydrino.

- Energy released only in multiples of 27.2 eV (electron volts) i.e. 27.2 eV, 54.4 eV, 81.6 eV, 109 eV ...
- Occurs through a radiationless resonance energy transfer (also known as Forster Resonance Energy Transfer or FRET)
- FRET is a widely accepted theory in science and is an energy transfer mechanism between atoms during close contact.
- Occurs between Hydrogen and another atom that has electron(s) with ionization energies that sum to **exactly** some multiple of 27.2 eV (within a small percentage).
- Releases continuum radiation (i.e. photon has a spectrum of frequencies within a single photon) and thermal energy.

A consequence of continuum radiation is that the “smoking gun” signal for hydrino creation can be buried and hard to see in the spectrum data obtained from experiments.

# Blacklight Power: Theory

## Standard Accepted Theory

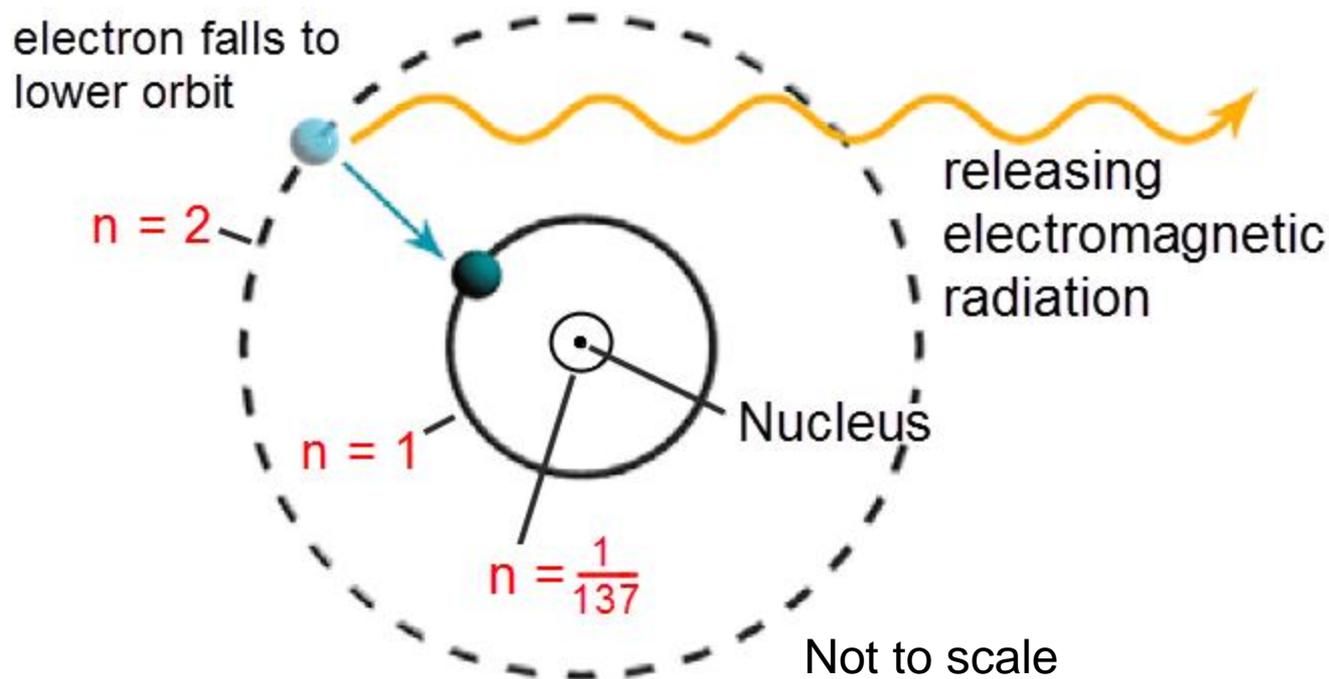
Electron falls from higher orbit state to lower orbit state and emits electromagnetic radiation. Lowest orbit state is  $n = 1$ .

## Randell Mills's Theory

Electron falls from higher orbit state to lower orbit state and emits electromagnetic **and** thermal radiation. Lowest orbit state is

$$n = 1/137.0359997$$

Fractional orbits are allowed, i.e. ( $n = 1/2, 1/3, 1/4 \dots 1/137$ ).



# For both Mills Model and Bohr Model

Formula for wavelength of light emitted by Hydrogen

$$\frac{1}{\lambda} = \frac{R_E}{h c} \left( \frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

wavelength

initial orbit state

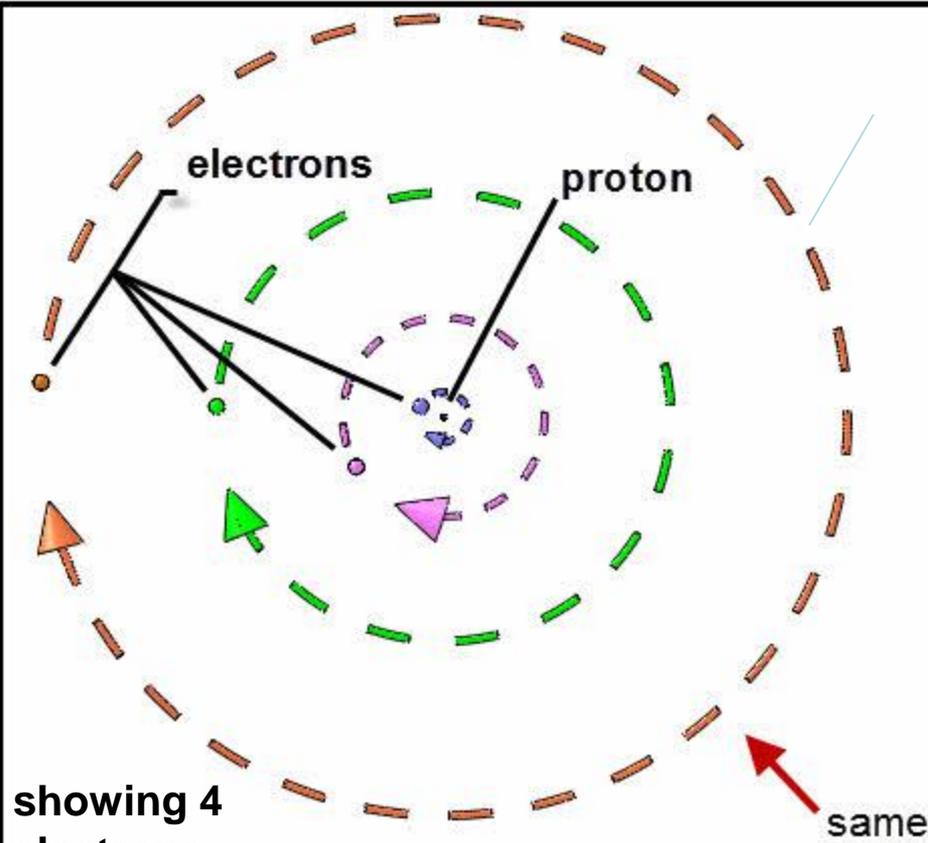
final orbit state

where  $n = 1, 2, 3 \dots$  infinity

**Bohr Model**  
(standard accepted theory)

where  $n = \begin{cases} \frac{1}{2}, \frac{1}{3}, \frac{1}{4} \dots \frac{1}{p} & \text{and } p \leq 137 \\ 1, 2, 3 \dots \text{infinity} \end{cases}$

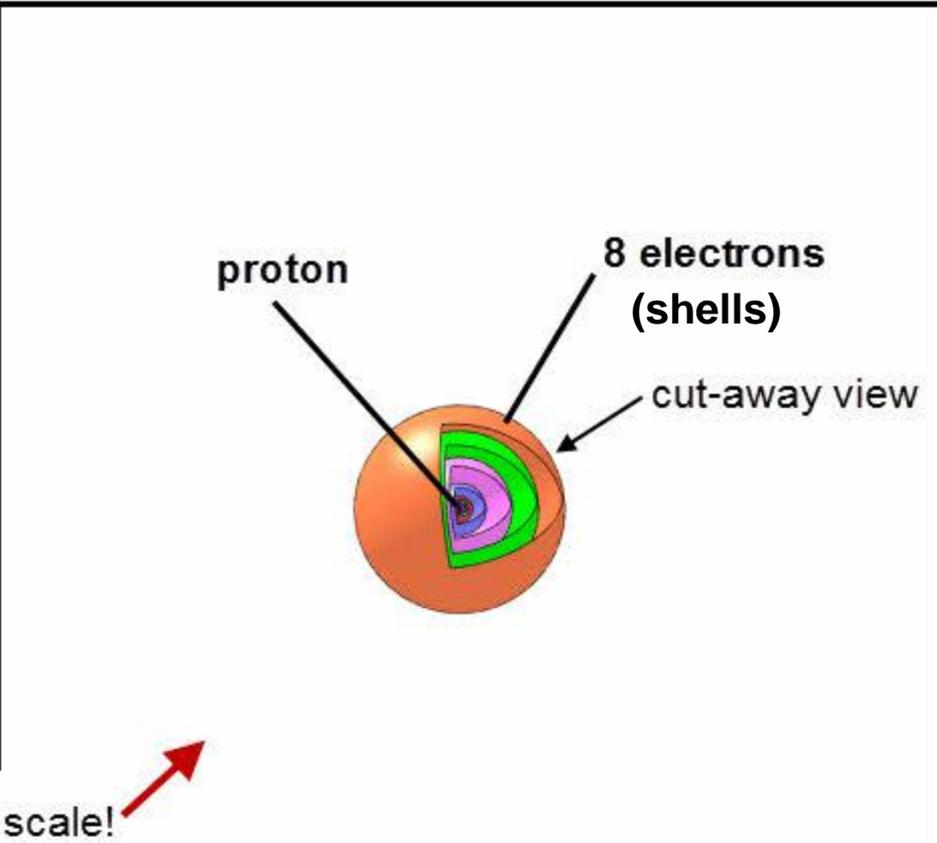
**Mills Model**



showing 4 electrons

**Bohr Model**

Point sized electrons orbit the proton like the planets orbit the Sun

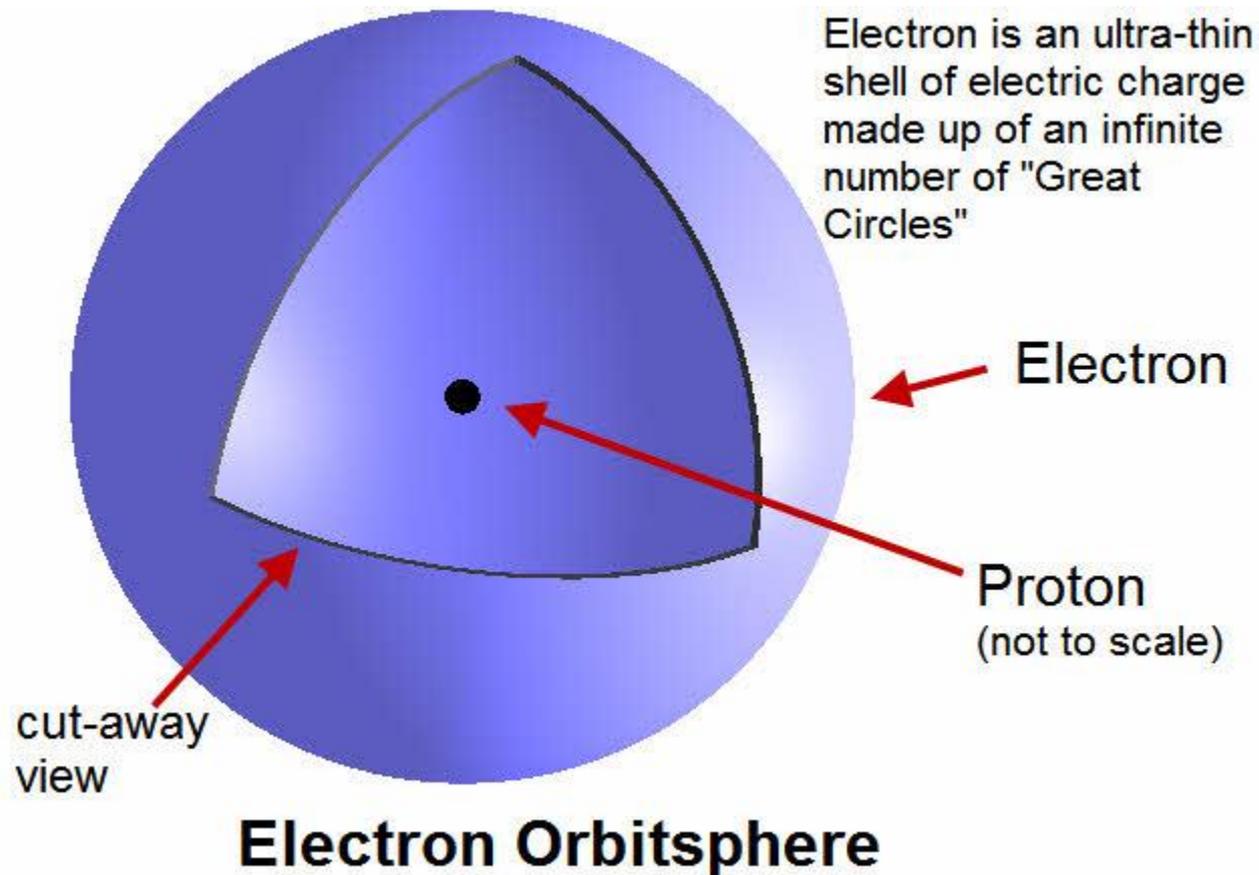


**Randell Mills Model**

Electrons are concentric spherical shells of electric charge that orbit the proton at the center.

## In the Mills Model, atoms have:

1. Positive charged nucleus at the center.
2. Negative charged electron in the form of a spherical shell.



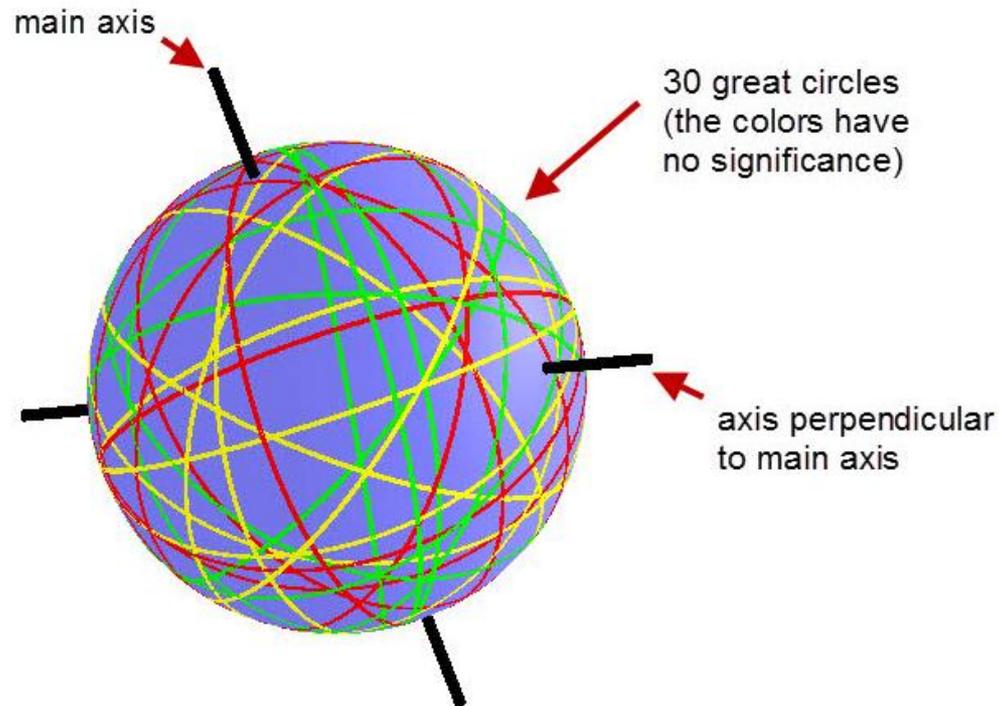
## Randell Mills's Electron Orbitsphere

- The electron in an atom is in the form of a shell of electric charge.
- The shell is made of an infinite number of infinitesimal sized charge currents that orbit on circular paths ("great circles") around the proton.

Here is an analogy:

Take an electron and break it up into 1 trillion "pieces" and form each "piece" into a ring of electric charge (and mass).

Center each ring around the proton at every possible orientation and have each ring spin (orbit) around the proton on "great circles". The net result looks like a sphere:



electron orbitsphere

Easiest way to understand Randell Mills's theory is to start with understanding the Bohr Model.

## Bohr Model

- First introduced by Niels Bohr in 1913
- Gave equations that calculated the wavelength of light emitted from the Hydrogen atom with an accuracy better than 0.06%
- Adding the “**Reduced Mass**” correction results in an accuracy of better than 0.003% !

That's 1 part in 30,000 **or the width of a human hair compared to 8 feet!**

**Energy for selected values of n.  
Randell Mills model of the atom.**

n	Kinetic Energy (eV)	Potential Energy (eV)	Total Energy (eV)	Electron Orbit Velocity (m/s)	Fraction of Speed of light dimensionless
$\frac{1}{137.0359997}$	255499.448	-510998.896	-255499.448	299792458	1.00000000
$\frac{1}{137}$	255365	-510730	-255365	299713701	0.9997
$\frac{1}{60}$	48980	-97961	-48980	131261475	0.4378
$\frac{1}{10}$	1360.6	-2721.1	-1360.6	21876912	0.07297
$\frac{1}{4}$	217.69	-435.38	-217.69	8750765	0.02918
$\frac{1}{3}$	122.45	-244.90	-122.45	6563073	0.02189
$\frac{1}{2}$	54.423	-108.84	-54.423	4375382	0.01459
<b>1</b>	13.606	-27.211	-13.606	2187691	0.007297
<b>2</b>	3.401	-6.803	-3.401	1093845	0.003649
<b>3</b>	1.512	-3.023	-1.512	729230	0.002432
<b>4</b>	0.850	-1.701	-0.850	546922	0.001824
<b>infinity</b>	0	0	0	0	0

Notice at  $n = 1/137.0359997$  that the potential energy is exactly equal to the electron's rest mass of 510998.896 eV and that the velocity of the electron is exactly equal to the speed of light.

Fine structure constant

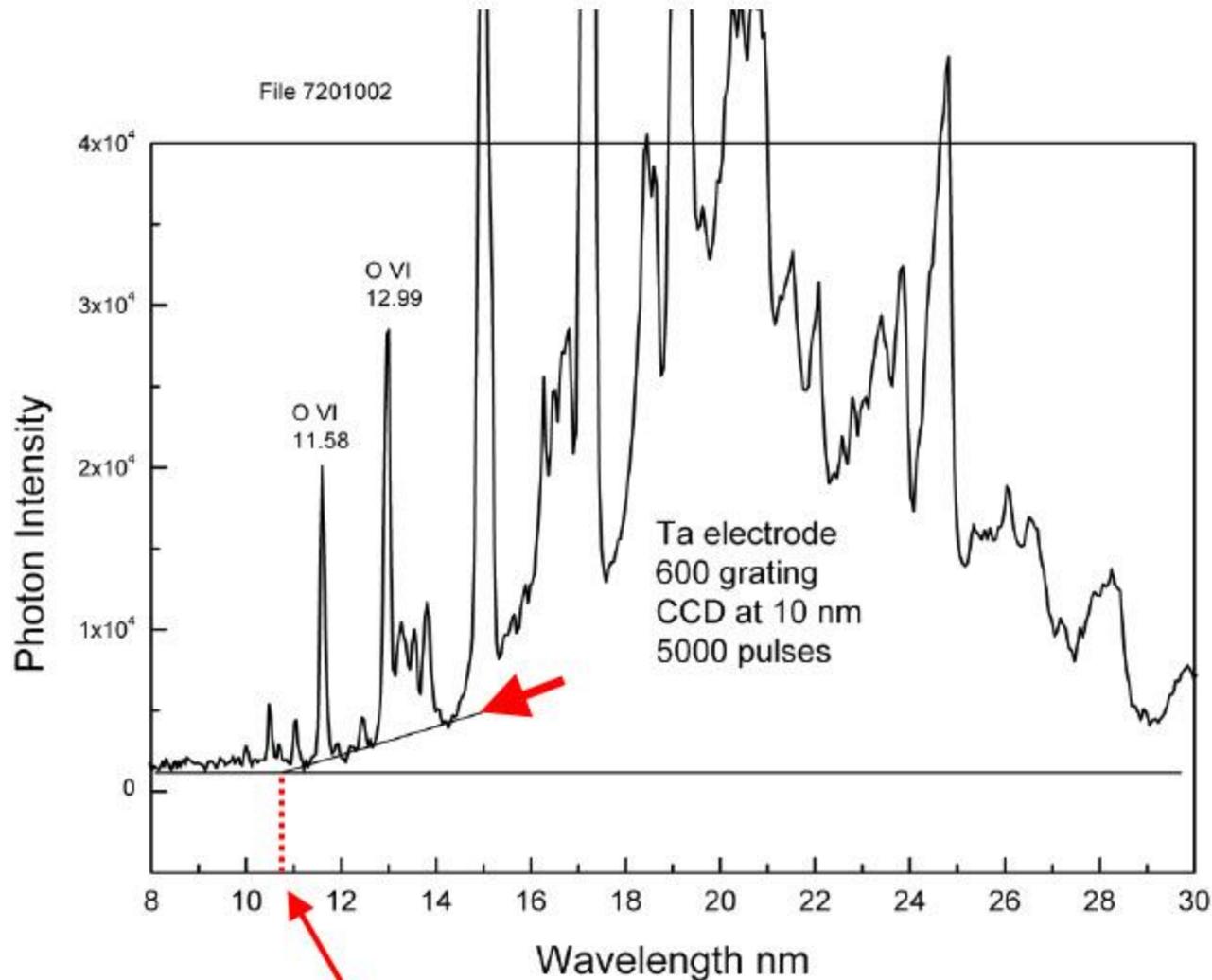


Fine structure constant,  $n = 1/137.0359997$  has prominent part in Mills's theory as seen in table above.

# Blacklight Power: Data

Laboratory experimental evidence:

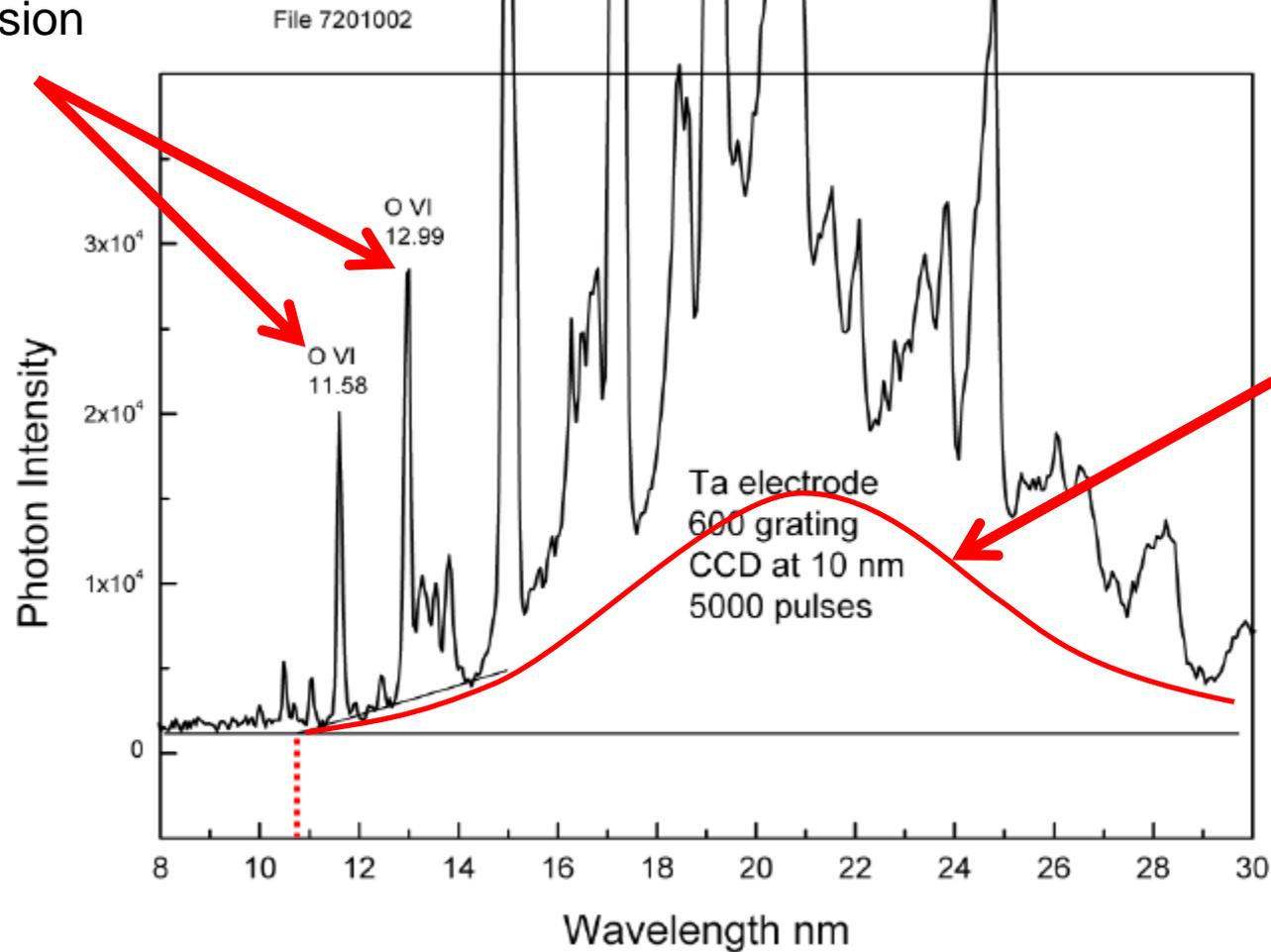
- Spectral lines from gas plasmas that match theory.
- Excess heat that can not be explained by conventional chemistry.
- New compounds made from hydrinos and other atoms.
- Equations that accurately calculate quantities such as ionization energies and molecular bond energy.



continuum radiation has cutoff at approximately 10.8 nm which is close to Mills theory which predicts 10.1 nm.

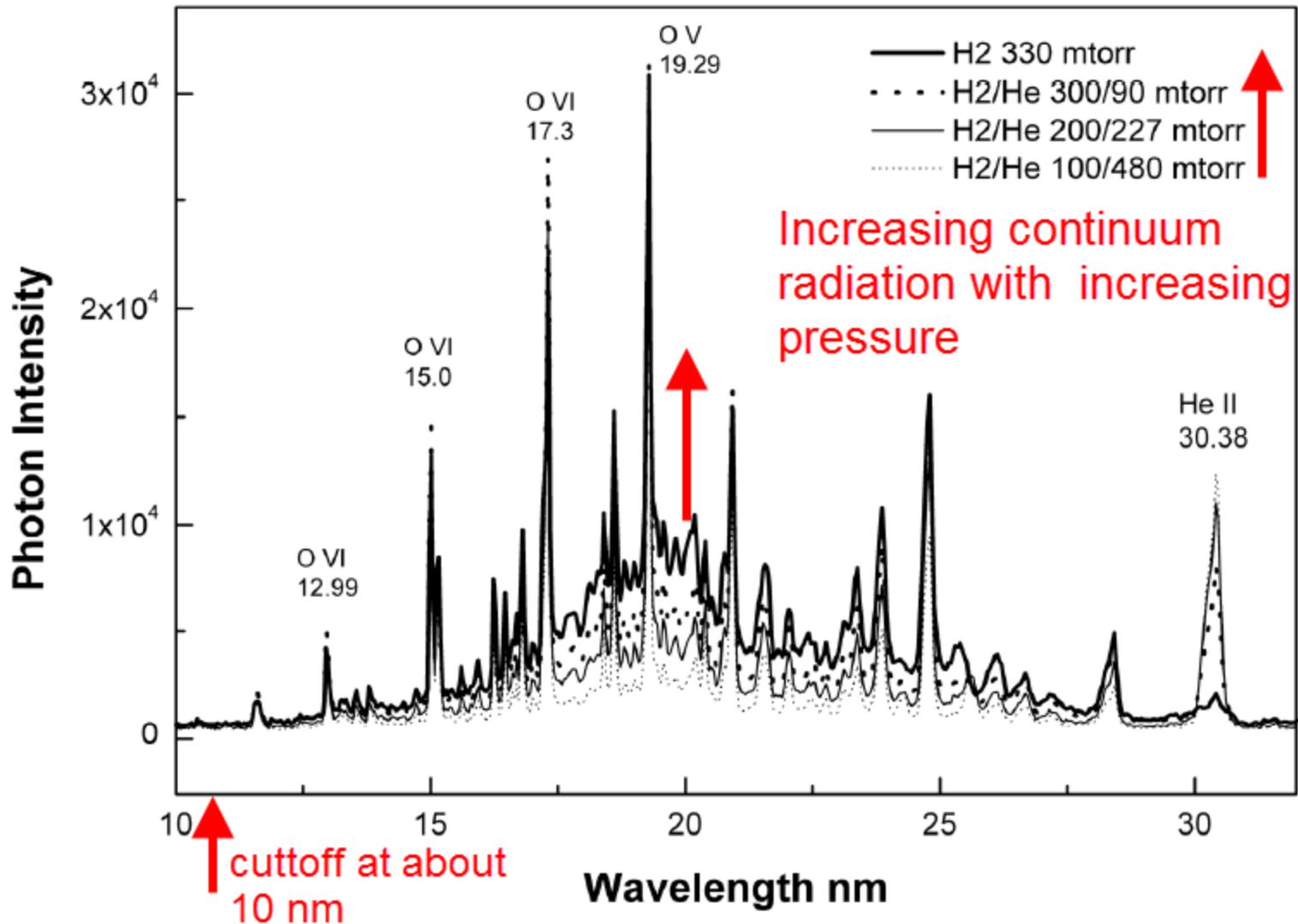
Low energy plasma arcs give continuum radiation with cutoffs that match Mills's theory .

Oxygen  
emission  
lines



Example of  
possible shape of  
continuum  
radiation curve  
that created  
actual data.

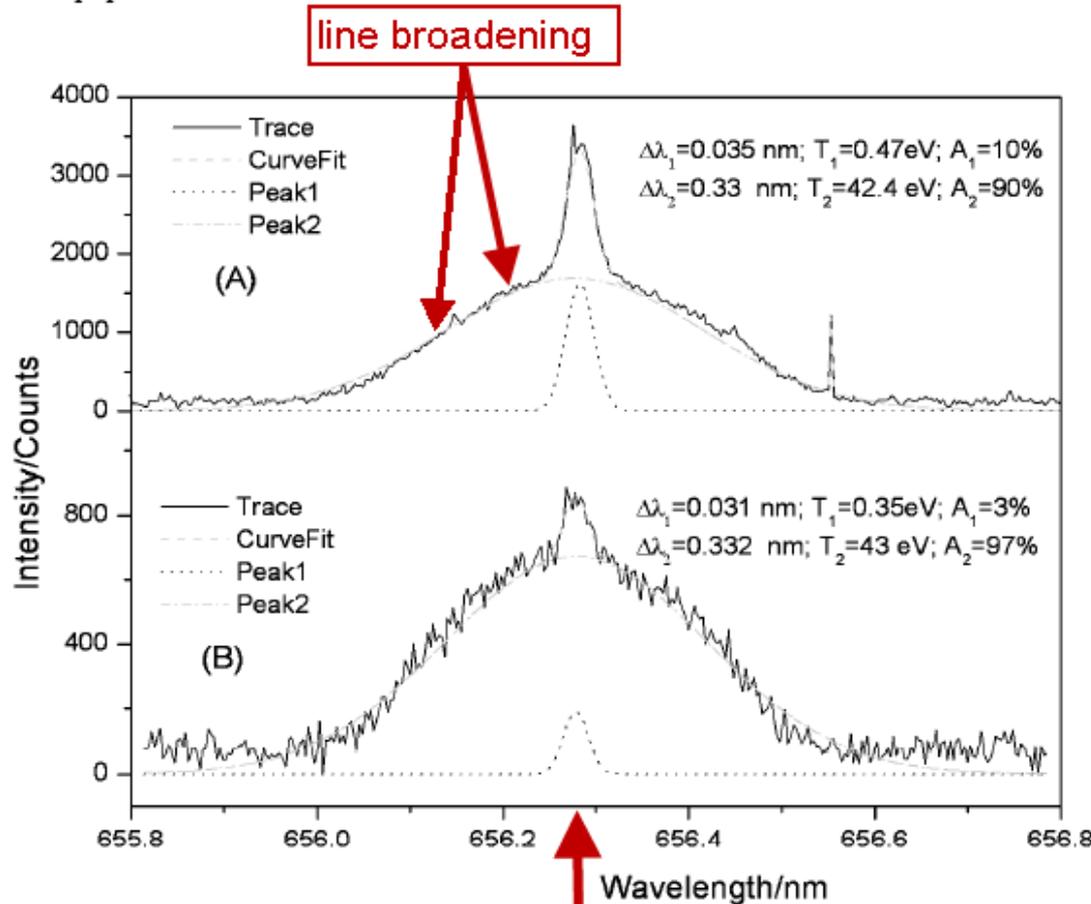
In Mills's theory, continuum radiation is emitted from Hydrogen when electron drops from orbit state  $n = 1$  down to  $n = \frac{1}{4}$  and has a theoretical cutoff frequency at 10.1 nm. But it does not have a well defined peak that can be seen in the data. Any peak is obscured by Oxygen and other atomic transition lines plus the fact that atoms are not known to emit continuum radiation in these experimental conditions.



Low energy plasma arcs give increasing continuum radiation as the Hydrogen pressure increases, with cutoffs that match Mills's theory .

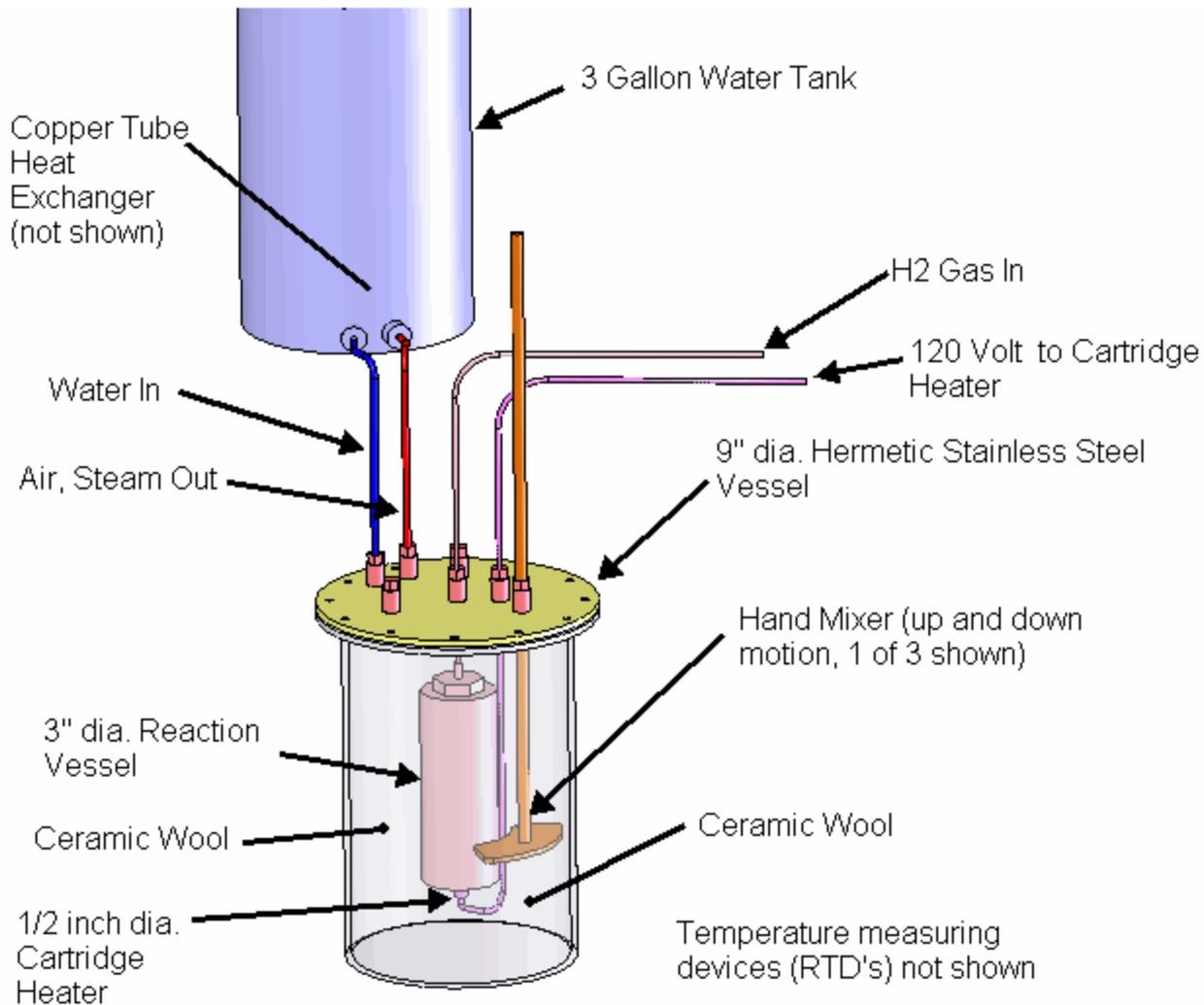
Balmer line broadening due to doppler effect. Fast moving Hydrogen ("fast H") emits Balmer photons and due to the doppler effect, the frequency is "smeared" about the center of the frequency. Hydrino reactions produce fast moving hydrogen.

Figure 5. The 656.3 nm Balmer  $\alpha$  line width recorded with a high-resolution visible spectrometer on (A) the initial emission of a lithium-argon-hydrogen rt-plasma and (B) the emission at 70 hours of operation. Lithium lines and significant broadening of only the H lines was observed over time corresponding to an average hydrogen atom temperature of  $>40$  eV and fractional population over 90%.



Balmer line wavelength 656.2 nm

My plan is to verify these claims with the experiment shown below.



My plan for replicating Blacklight Power's experiment.

Following slides can be considered the Appendix and show more details.

**Randell Mills's Theory explains the following cosmological observations**

Dark Energy	Creation of hydrinos converts mass to radiation and causing the Universe to expand at an accelerating rate (will stop accelerating in 500 billion years and then start collapsing at an accelerated rate).
Dark Matter	Dark Matter makes up 80% of all matter in the Universe. Hydrinos do not interact with radiation and therefore are “dark”.
Sun's corona	Sun's corona (outer layer) has a temperature greater than 1 Million Kelvin while the surface temperature is only about 6000 Kelvin.
Warm Interstellar Medium	Some thermal heat in galactic clouds comes from creation of hydrinos.



Dark Matter Ring Modeled around Galaxy Cluster CL0024+17

Bluish tint is a computer generated overlay of dark matter locations. The darker areas are an absence of dark matter. Look for the long thin streaks stretched along radial arcs and indicate a common center point at the center of the photo – these are galaxies optically stretched through gravitational lensing.

Light does not interact with dark matter. Light will not reflect off dark matter and dark matter will not absorb light. But dark matter has mass and will gravitationally bend light.

2004 June 27



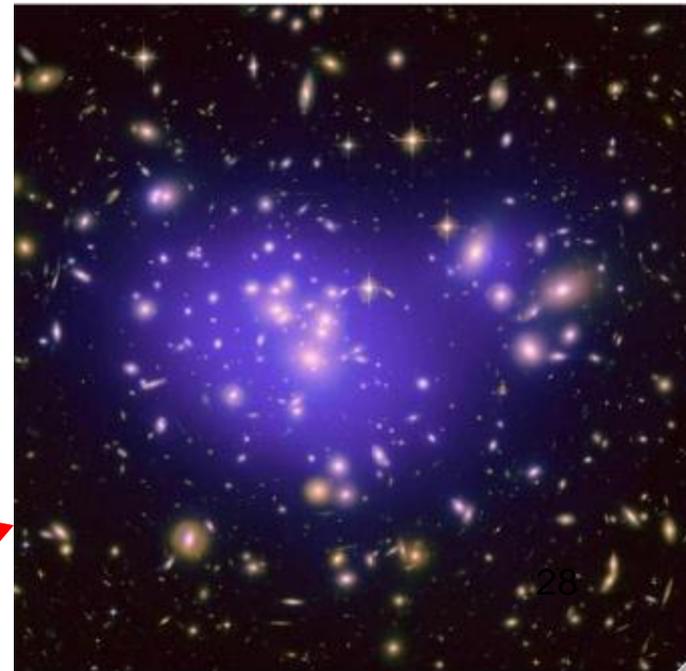
Galaxy Cluster Abell 1689 Warps Space

Gravitational lensing due to dark matter

Bluish tint is computer generated overlay map of the dark matter (both photos are the same picture).



Yellow / tan galaxies are all in one common galactic cluster having a large fraction of its mass in dark matter. Blue / whiter arc shaped streaks are galaxies much further away that get the arc shape through gravitational lensing.



# Problems with Quantum Mechanics but solved with Randell Mills's Classical Quantum Mechanics

<b>Standard Quantum Mechanics (SQM)</b>	<b>Classical Quantum Mechanics (CQM), Randell Mills</b>
<p>Electron in Hydrogen atom has angular momentum equal to the following:</p> <ol style="list-style-type: none"> <li>infinite angular momentum at orbit state <math>n = \text{infinity}</math>.</li> <li>zero angular momentum at orbit state <math>n = 1</math></li> </ol>	<p>Electron in Hydrogen atom always has one unit of angular momentum at all orbit states (equal to reduced Planck constant).</p>
<p>Bound point particle electron should radiate electromagnetic energy and spiral down into the nucleus.</p>	<p>An extended distribution of accelerating electric charge (i.e. covering a spherical surface) does not radiate.</p>
<p>Stern Gerlach experiment is not explained by SQM which needs a correction factor (g-factor).</p>	<p>CQM explains Stern Gerlach experiment without fudge factor.</p>
<p>The electron is everywhere at the same time based on probabilities.</p>	<p>The electron has a definitive shape, location and velocity.</p>
<p>Has no real world interpretation for the atom in the macroscopic world. Spin, angular momentum etc.</p>	<p>Based on first principles (i.e. based on electrodynamics and Newton's equations)</p>
<p>Schrodinger equation does not predict the electron magnetic moment or the spin quantum number.</p>	<p>CQM predicts these quantities and they match experiment.</p>

# Fine Structure Constant = $1 / 137.035999$

A huge mystery in science.

Science can not explain why this number shows up in multiple, seemingly unrelated equations.

For example, scientists measure two unrelated quantities in a laboratory and the ratio of the two numbers is exactly equal to  $1 / 137.035999$ . And this happens in other unrelated experiments and they can not explain why.



## Mill's explanation of the Fine Structure Constant

- Smallest possible fractional orbit state in Mills's theory
- Mass of electron in terms of energy (converted to energy using  $E = m c^2$  ) is **exactly** equal to the potential energy of an electron evaluated between infinity and fractional orbit state  $n = 1 / 137.035999$
- At orbit state  $n = 1 / 137.035999$ , the infinitesimal charge currents on the orbitsphere travel at a velocity equal to  $c$ , the speed of light.

Photon, Thermal and Total Energy Released for the Hydrogen Atom.  
Measured and Calculated Values.  
Randell Mills model of the atom.

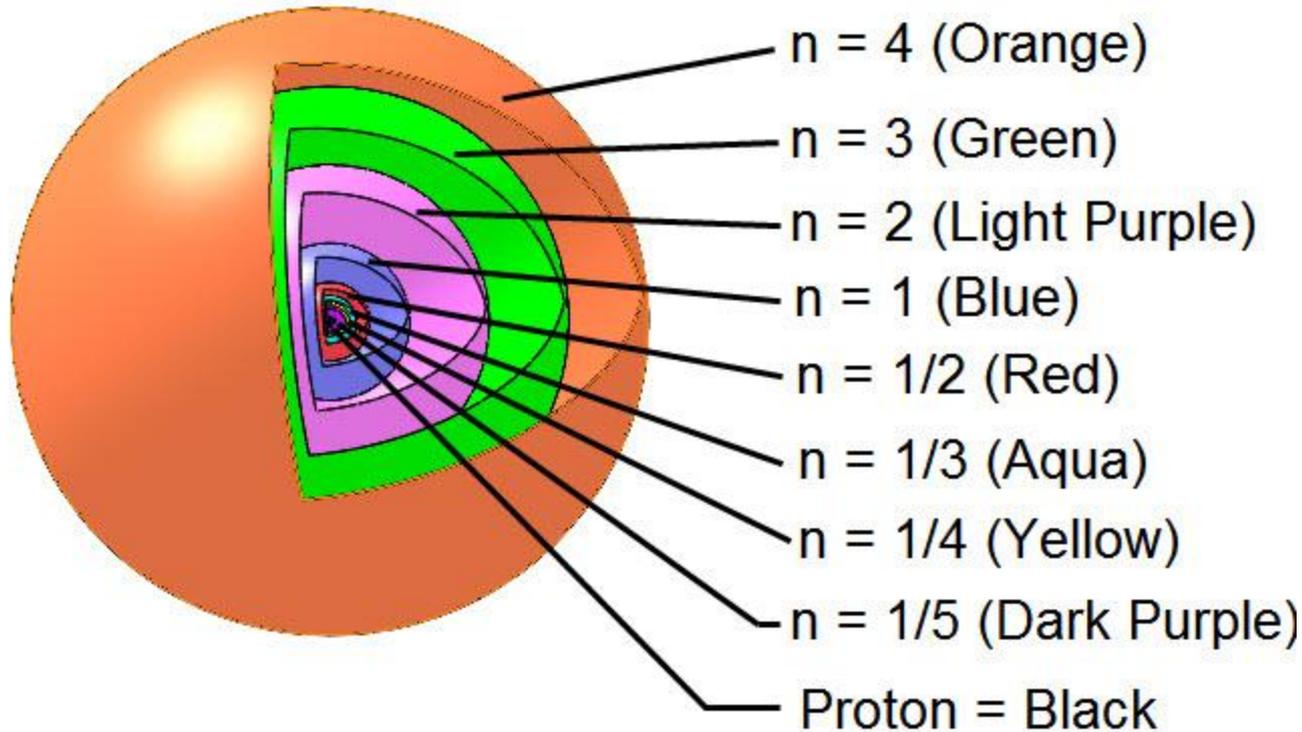
Electron Orbit Transition $n = \begin{cases} 1, 2, 3 \dots \text{inf.} \\ \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots, \frac{1}{137} \end{cases}$	Wavelength Calculated From Mills's model (nanometers)	Wavelength Measurement Using Spectroscopy (nanometers)	Photon Energy (eV)	Thermal Energy (eV)	Total Energy Released (eV)	Series Name
$1 \rightarrow \frac{1}{4}$	cutoff at 10.1 nm*		122.4	81.6	204	Not Yet Named
$1 \rightarrow \frac{1}{3}$	cutoff at 22.8 nm*		54.4	54.4	108.8	
$1 \rightarrow \frac{1}{2}$	cutoff at 91.2 nm*		13.6	27.2	40.8	
$2 \rightarrow 1$	121.50	121.5	10.20	0	10.20	Lyman Series
$3 \rightarrow 1$	102.52	102.5	12.09	0	12.09	
$4 \rightarrow 1$	97.20	97.2	12.76	0	12.76	
$5 \rightarrow 1$	94.92	94.9	13.06	0	13.06	
$6 \rightarrow 1$	93.73	93.7	13.23	0	13.23	
$7 \rightarrow 1$	93.03	93	13.33	0	13.33	
$8 \rightarrow 1$	92.57	92.6	13.39	0	13.39	
$9 \rightarrow 1$	92.27	92.3	13.44	0	13.44	
$10 \rightarrow 1$	92.05	92	13.47	0	13.47	
$11 \rightarrow 1$	91.89	91.9	13.49	0	13.49	
infinity $\rightarrow 1$	91.13	91.12	13.61	0	13.61	

} Hydrinos

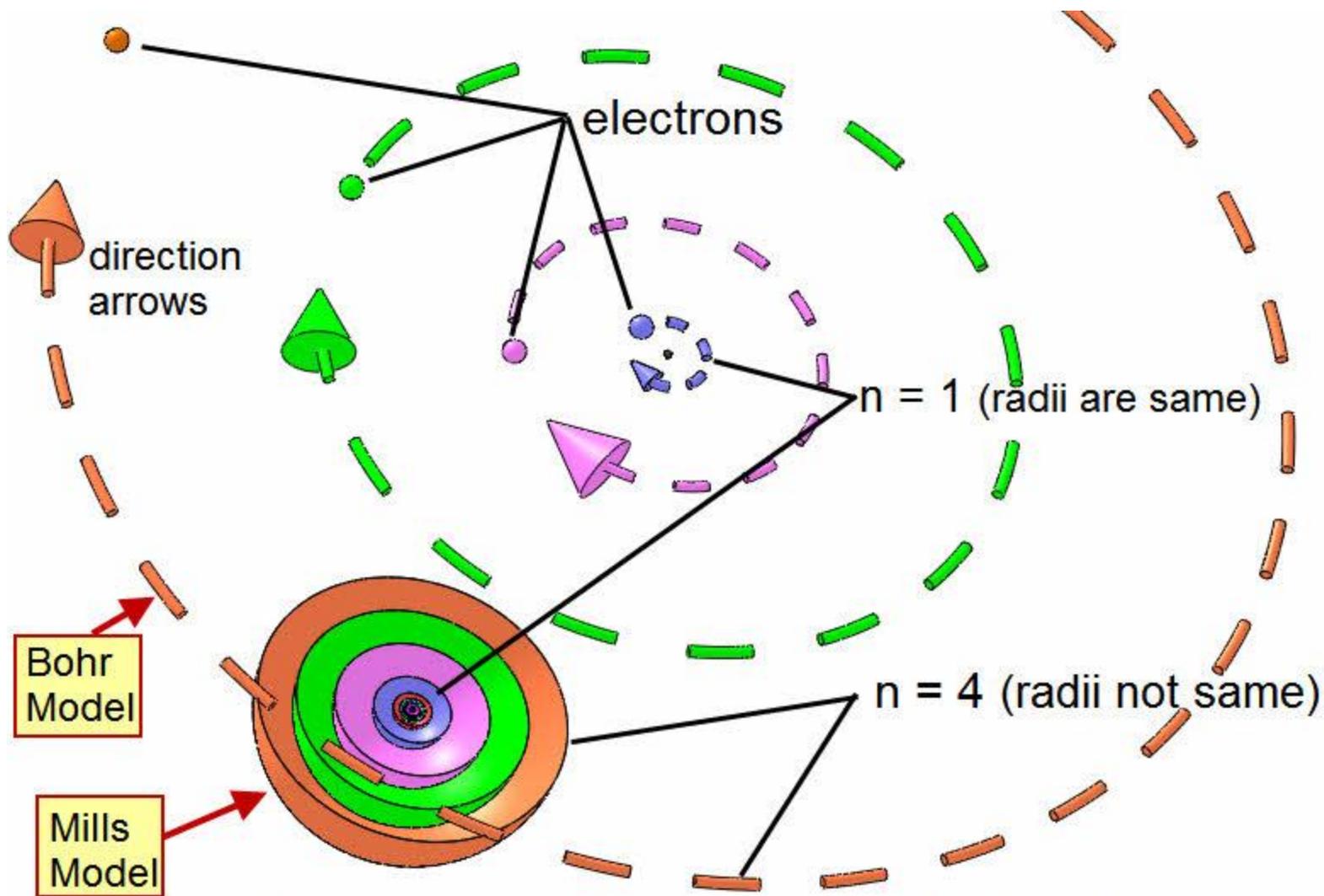
\* Formation of hydrinos releases thermal energy and electromagnetic radiation energy. The electromagnetic radiation has a continuous frequency spectrum having a cutoff at the wavelength listed.

# Electron Orbitsphere

Showing 8 concentric spherical electron shells depicting different orbit states  $n$ .



Note: This does not depict a stable atom and colors have no relation to light emission colors.



At orbit state  $n = 4$ , the radius of the Bohr Model orbit is 4 times larger than the Mills Model at the same orbit.

Bohr Model radius  $r = \underline{n}^2 a_0$  ←  $\underline{n}$  is squared

Mills Model radius  $r = \underline{n} a_0$  ←  $\underline{n}$  is not squared

Mills's model of atom: radius of electron orbit,  $r = n a$

Bohr Model of atom: radius of electron orbit,  $r = n^2 a$

Given that the radii are different between the two models (Mills and Bohr)...

How can the final light emission equations look the same if the **Kinetic Energy** and thus the **velocity** of the electron is the same in both models for a given quantum state  $n$ ?

**Answer:** Mills's model has a different electric field between the electron and the proton equal to  $e/n$  (caused by the "trapped photon") while the Bohr Model has an electric field of just  $e$ .

Bohr Model  
electron velocity

$$v = \sqrt{\frac{k_e e^2}{m r}}$$

Diagram illustrating the Bohr Model electron velocity equation. The equation is  $v = \sqrt{\frac{k_e e^2}{m r}}$ . Arrows point from the terms in the equation to their definitions:  $k_e e^2$  is labeled as **Electric field**,  $r$  is labeled as  $r = n^2 a_0$ .

Mills's Model  
electron velocity

$$v = \sqrt{\frac{k_e e^2}{m r}}$$

Diagram illustrating the Mills's Model electron velocity equation. The equation is  $v = \sqrt{\frac{k_e e^2}{m r}}$ . Arrows point from the terms in the equation to their definitions:  $k_e e^2$  is labeled as  $e = \frac{e}{n}$  (Electric field), and  $r$  is labeled as  $r = n a_0$ .

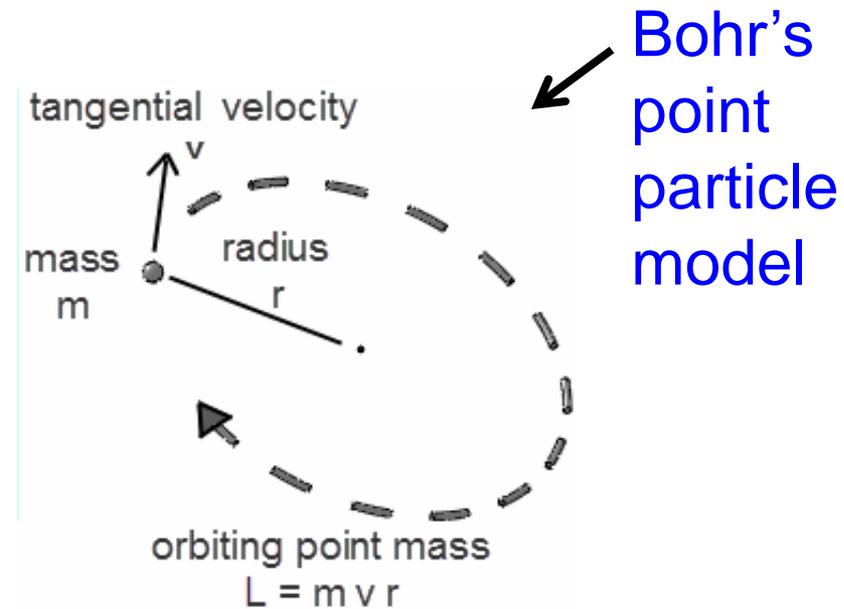
Why do the equations for the Bohr Model and Randell Mills's model look the same?

**Bohr Model** - Planetary model, electrons orbit proton same as the moon orbits the earth.

**Randell Mills model** - Infinite number of infinitesimal point charges (and point sized masses) orbit the proton, creating a shell of electrical charge.

Equation for angular momentum "**L**" of a ring (Mills) is the same as the angular momentum of an orbiting point particle (Bohr).

Final equations for the wavelengths of the emitted light are the same in both models.



Mills's great circle model

