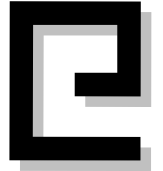Earth/matriX Science Today

Physical and Chemical Constants:
The Significance of the 1.36c | 1.366c Fractal Units for the Electron in an Atom
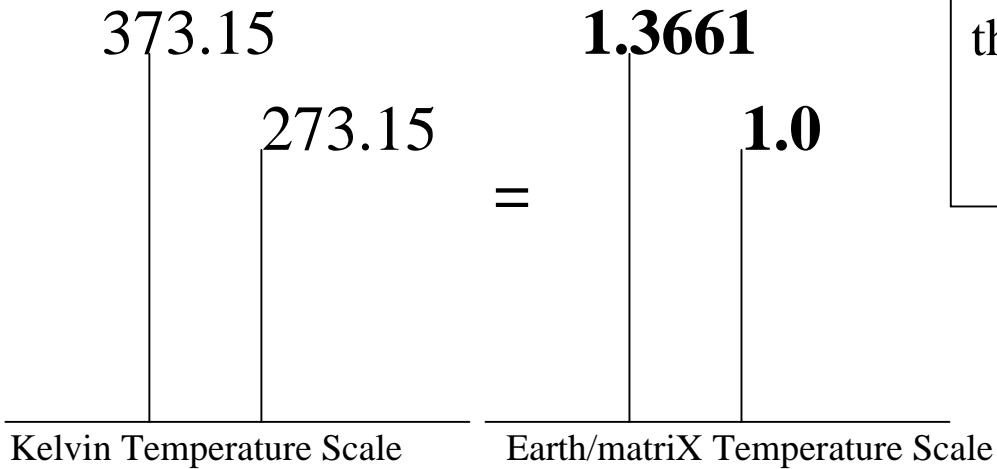
Charles William Johnson

Extract

The **ground state energy level of the electron** in an Hydrogen atom [**-13.6 eV**], the **ratio between the boiling and freezing points of water [1.3661]**, and the **ratio between the maximum number of electrons** in the 6th and 7th shells [**1.361**] of an atom reflect a direct relationship regarding their measured aspects and units. Together with the comparison of these three cited physical and chemical constant relationships, a partial list is also presented of other selected physical and chemical constants and events relating to a range of 1.36c | 1.38c fractal values for the units of measurement of matter-energy events.

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The Boiling Point of Water is 373.15 kelvin
The Freezing Point of Water is 273.15 kelvin

373.15   1.3661

273.15   1.0

=

Kelvin Temperature Scale   Earth/matriX Temperature Scale

The ratio between
the boiling/freezing points of water:

373.15 / 273.15 = **1.3661**

When the freezing point of water is taken as unit 1.0, then the boiling point of water is 1.3661, with the difference between them as .3661

Outer limit ratio between the 6th and 7th shells of an atom:

$$98 / 72 = \mathbf{1.3611111}$$

98   **1.361**

72   **1.0**

=

Maximum Number of Electrons
in the Shells of an Atom:
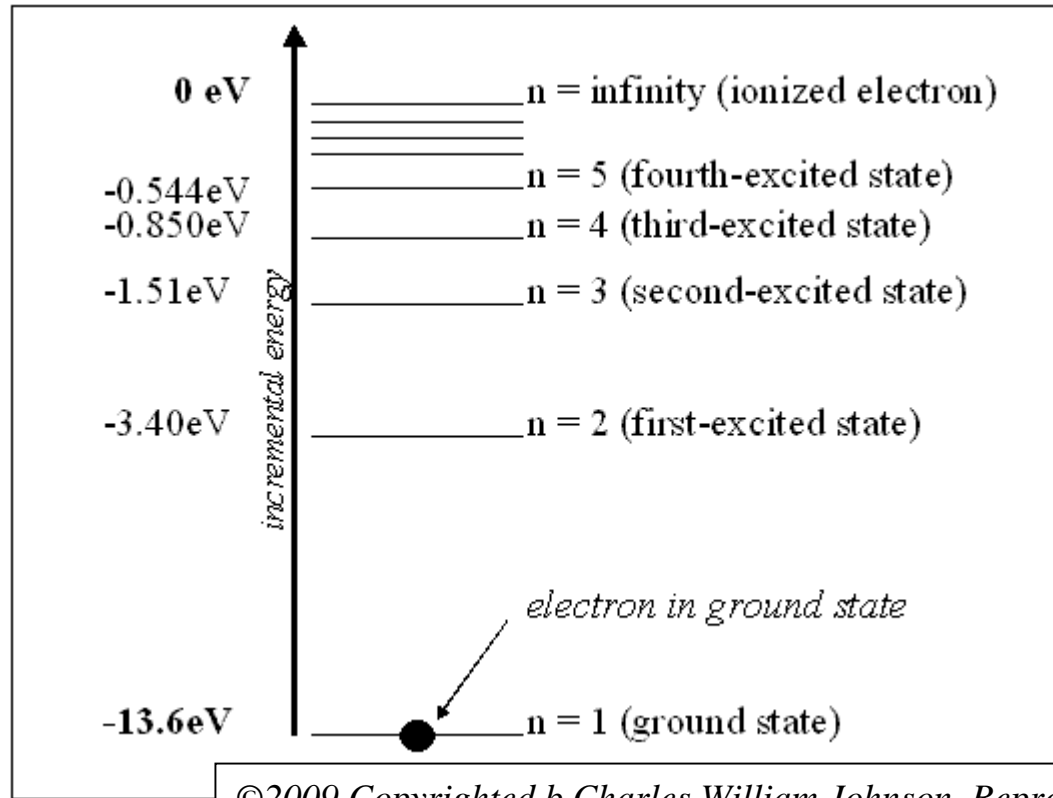2 | 8 | 18 | 32 | 50 | 72 | 98

2   8   18 32 50 72 98

When shell 6 is taken as unit 1.0, then shell 7 is 1.361, with the difference between them as .36111

NB: Illustration of atomic shells for emphasis only; not to scale.

The Ground State Energy Level of the Electron in a Hydrogen Atom -13.6 eVm^2

0 eV _____ n = infinity (ionized electron)

-0.544eV _____ n = 5 (fourth-excited state)
-0.850eV _____ n = 4 (third-excited state)

-1.51eV _____ n = 3 (second-excited state)

incremental energy

-3.40eV _____ n = 2 (first-excited state)

electron in ground state

-13.6eV _____ n = 1 (ground state)

The ground state energy level of the electron in a Hydrogen atom is given generally as **–13.6eV.** It requires a –0.0000**136** MeV to pull the electron from a Hydrogen atom. This is the binding energy, as that same amount of energy is required to hold the Hydrogen atom together. In a sense, then, the –13.6 eV energy is the **binding/unbinding** energy of the Hydrogen atom.

Observations In Order

The ratio between the boiling point of water and the freezing point of water on Earth is 1.366099213 as: **373.15** Kelvin _divided by_ **273.15** Kelvin yields **1.366099213.**
The 1.366099213 fractal value may be rounded off to **1.3661** for all practical purposes. Given the fact that energy is added to frozen water in order to convert it to boiling water, it is not surprising to observe a coincidence in numerical values with the ionization energy of Hydrogen. Water consists of Hydrogen and Oxygen (H_2O). Hence, one would expect the numbers relating to the ionization of Hydrogen to be relational to the boiling/freezing points of water (Hydrogen and Oxygen).

I find it logical to find a similar **fractal** value for the binding/unbinding energy of Hydrogen [**-13.6 eV**] (**1.36 fractal**), and the thermodynamic temperature scale as of the ratio **1.3661** relating to the boiling/freezing points of water (Hydrogen$_2$ plus Oxygen). It is generally stated that the principal reason that water stays together is precisely due to the Hydrogen bond between the oxygen and hydrogen atoms. Further, the hydrogen bonds in water are the main reason for the high freezing (or, melting) and boiling points of water.

To now find that the ratio between the maximum number of electrons in the 6th and 7th shells of an atom reflects a **1.361c** fractal value contributes to the previous comparison, _inasmuch_ as the atom's electrons are involved in all three matter-energy events.

As may be observed from the previous slides, the **ground state energy level of the electron** in an Hydrogen atom [**-13.6 eV**], the **ratio between the boiling and freezing points of water [1.3661]**, and the **ratio between the maximum number of electrons** in the 6th and 7th shells [**1.361**] of an atom reflect a direct relationship among themselves regarding their measured aspects and units. The 1.36c | 1.366c fractal range of measured units is in no way a mere perception of random coincidences of number, but rather each event reflects a direct relationship of the constituent structure of the matter-energy events studied in each case.

Together with the comparison of these three cited physical and chemical constant relationships, a partial list is presented on the following slide of other selected physical and chemical constants and events relating to the extended range of **1.36c | 1.38c** fractal values for the units of measurement of matter-energy events. In this sense, one also finds matter-energy events such as the fine structure constant, the speed of light among other constants that fall within this range of fractal measured units.

Table of Matter-Energy Events and Corresponding 1.36c Fractal Values

Ionization Energy of Hydrogen
The ionization energy of hydrogen is -**13.6** eV.

Solar Constant
The solar constant is **1.3661** w/m^2.

Thermodynamic Temperature Scale
The thermodynamic temperature reflects the **1.3661** ratio
between the boiling and freezing points of water.

Hartree Energy
Hartree energy 27.2113961 / 2 = **13.60**569805

Rydberg Constant
  Rydberg constant **13.60**56981
  [same as Hartree energy half value]

Core-Mantle Boundary
  136 Gigapascals of pressure at the Core-mantle boundary

Newtonian Constant of Gravitation
The Newtonian Constant of Gravitation:
6.6742 is a multiple of **1366**8.7616

Sidereal Year of Earth
  The Sidereal Day-Count of Earth:
  365.256 is a reciprocal multiple of .00**1368**9254

Velocity of Light
The Speed of Light is a reciprocal of **1.366**278534

Refractive Index of Light
The Refractive Index of Light: **1.366**9

"*Living cells* typically have a refractive index of between 1.33 and 1.38."
 Approximately **1.36** is the average of these two cited values.

The Inverse Fine-Structure Constant
The Fine-Structure Constant and the Inverse Fine-Structure Constant are
7.297352568 and **137.03**599911 respectively

Electron to Alpha Particle Mass Ratio
The Electron to Alpha Particle Mass Ratio is given as a constant value **1.370**933555

The Boltzmann Constant
The Boltzmann Constant and/or the Kelvin-Joule Relationship is **1.380**6505

*The Reciprocal of **136** Fractal*

Further consider the reciprocal multiples of the **136c** fractal value.

1 / **.136**   =   .7352841176
                                                          .367647058
                                                          .183823529

The reciprocal of 136 fractal, then, halves down to 1.83823529 fractal,
which is suggestive of the **neutron-electron mass ratio**: **1838.6836598**.

Consider the fractal expression of the neutron-electron mass ratio,
which is very near the 1.36 fractal mark:

1 / .18386836598 =   5.43867345
                                                  2.719336725
                                                  1.359668363