

# Re: On absolute units

---

*Source:* <http://sci.tech–archive.net/Archive/sci.physics/2005–12/msg01291.html>

---

- *From:* [Louis\\_N@xxxxxxxxxxxxxxxxxxxxx](mailto:Louis_N@xxxxxxxxxxxxxxxxxxxxx)
  - *Date:* 17 Dec 2005 15:40:38 –0800
- 

Please read my considerations about quantum–cosmological units.

THE COSMIC QUANTUM–UNITS and THE PLANCK UNITS.

By Louis Nielsen Denmark

Treatise: <http://www.rostra.dk/louis>

THE PLANCK QUANTITIES.

The so–called Planck quantities are not based on a physical theory, and neither they are themselves base for a physical theory. They are 'constructed' purely by a dimensional analysis, based on Newton's gravitational constant  $G$ , the velocity of light  $c$  and Planck's constant  $h$ . The intention of Max Planck (1858–1947) was – in 1899 – to find a unit of length  $l(pl)$ , a unit of time  $t(pl)$  and a unit of mass  $m(pl)$ , independent of specific local systems and the existence of man. ( Reference: Max Planck: ‚Über irreversible Strahlungsvorgänge‘. Sitzungsberichte der Preußischen Akademie der Wissenschaften, vol. 5, p. 479 (1899) )

The Planck quantities are defined by:

$$(1) l(pl) = ((h \cdot G) / c^3)^{1/2} = 4.1 \cdot 10^{-35} \text{ meter}$$

$$(2) t(pl) = l(pl) / c = 1.4 \cdot 10^{-43} \text{ sec}$$

and

$$(3) m(pl) = ((h \cdot c) / G)^{1/2} = 5.5 \cdot 10^{-8} \text{ kg}$$

Most cosmologists, trying to describe the earliest phases of the Universe by a Big Bang model, use the Planck time unit, about  $10^{-43}$  sec, as the nearest possible time which can be used to approach the 'moment' of the Big Bang. Events before the Planck time cannot be described by the conventional cosmological theories. Einstein's general theory of relativity, which is basic for the accepted cosmological

## Re: On absolute units

models, collapses when we try to analyse the early Universe. The reason is that the theory of general relativity is not based on quantum physics.

### THE QUANTUM–COSMOLOGICAL UNITS.

Let us define the following absolute cosmic units of quantities: The elementary length, the 'quantum of length'  $r$ , the elementary time, the 'quantum of time'  $t$ , and the actual elementary mass, the 'quantum of mass'  $m$ .

The absolute quantum–cosmological units are defined by:

$$(4) r = h/(M*c) = 1.4*10^{(-102)} \text{ meter}$$

$$(5) t = r/c = 4.7*10^{(-111)} \text{ sec}$$

and

$$(6) m = h/(R*c) = 2.2*10^{(-68)} \text{ kg in our epoch.}$$

In equation (4)  $M = 1.6*10^{(60)}$  kg is the total and constant mass of the Universe (See my treatise about a calculation of the value of  $M$ ),  $h$  is Planck's constant and  $c$  is the velocity of light. In equation (6)  $R = 1*10^{(26)}$  meter is the actual extension of the Universe.

### THE QUANTUM EVOLUTION OF THE UNIVERSE.

I postulate that the connection between the actual extension of the Universe  $R$  and the quantum of length  $r$  is:

$$(7) R = n * r$$

I call  $n$  the 'cosmic evolution quantum number'. As the Universe evolves in 'quantum jumps'  $n$  is 'ticking' up through the natural numbers, beginning with the number one.

My discovery is that  $n$  is equal to the third power of the actual and variable ratio between the magnitude of the electrostatic and the gravitostatic forces between two electrons. (See my treatise)

The connection between the total mass  $M$  of the Universe and the actual quantum of mass  $m$  is:

$$(8) M = n * m$$

In (8)  $m$  is the mass of the actual – and variable – smallest energy–/matter quantum in the Universe. This energy–/matter quantum I have given the name uniton.

In our epoch  $n = 7.2*10^{127}$ . The actual value of  $n$  is equal to the actual number of possible unitons in the Universe. (See my treatise)

In our epoch the number of possible unitons in the Universe is thus equal to

$$7.2*10^{(127)}.$$

## Re: On absolute units

The connection between the age  $T$  of the Universe and the elementary time  $t$  is:

$$(9) T = R/c = n * t$$

### RELATIONS BETWEEN THE COSMIC QUANTUM-UNITS AND THE PLANCK'S UNITS.

The quantum-cosmological quantities define a set of cosmic quantum-units, which are much smaller and much more fundamental than the Planck units. In my dissertation I show the connection between the cosmic quantum-units and the Planck units, and furthermore I show which role the Planck units play in the quantum evolution of the Universe.

>>From the equations (1) and (7) we can calculate the value  $n(pl)$  of the cosmic evolution quantum number when the Universe had an extension equal to the Planck length  $l(pl)$  and an age equal to the Planck time  $t(pl)$ :

$$(10) n(pl) = l(pl)/r = 2.9 * 10^{(67)}$$

$n(pl)$  – which is a natural number – also gives the number of unitons in the Universe, when its age was equal to the Planck time!

>>From equation (8) we can calculate the mass of a single uniton when the Universe was in its Planck quantum-state. We get:

$$(11) m(t(pl)) = M/n(pl) = 5.5 * 10^{(-8)} \text{ kg}$$

Comparing the value in equation (11) with the value in equation (3) we see the following:

The Planck mass  $m(pl)$  is equal to the mass  $m(t(pl))$  of the uniton, when the Universe had an extension equal to the Planck length and an age equal to the Planck time!

The relatively great Planck mass has been an enigma. Above I have given the explanation of the great value of the Planck mass.

When the Universe had an extension equal to the Planck length  $4.1 * 10^{(-35)}$  meter, then it had an age equal to the Planck time  $1.4 * 10^{(-43)}$  sec, and it consisted of  $2.9 * 10^{(67)}$  unitons, each with a mass equal to the Planck mass  $5.5 * 10^{(-8)}$  kg.

The Planck quantities can thus be derived from the following physical quantities:

The quantum of length  $r$ , the quantum of time  $t$  and the total mass  $M$  of the Universe.

You can study more in my treatise:

<http://www.rostra.dk/louis/>

Serious comments are very welcome.

Best regards Louis Nielsen Denmark

Matej Pavsic skrev:

- > In October 2005 issue of Physics Today Frank Wilczek
- > published an article with the title "On Absolute Units,
- > I: Choices". First he discusses Planck units, which basically
- > are the units in which the fundamental constants
- >  $\hbar$ ,  $c$  and  $G$  are equal to 1. Then he discusses
- > the atomic units which are based on  $\hbar$ ,  $e$  and  $m_e$ ,
- > and other similar units. The essence is that one takes
- > a triple of fundamental constants.
- >
- > But a long time ago I have played with the possibility
- > of taking not three, but four fundamental constants.
- > So I explored what comes out, if we set
- >  $\hbar=c=G=4\pi\epsilon_0 = 1$ , where  $\epsilon_0$  is the
- > dielectric constant of vacuum. Then all physical quantities,
- > including the electromagnetic field and electric charge,
- > are pure numbers. Equations of physics in these units,
- > that I called units D, have very simple forms. I have calculated
- > the conversion factors between the units D and the usual
- > units MKSA. Numerical calculations with units D are
- > very easy, and I am routinely using them. A description of
- > those very practical units D is to be found in the
- > Appendix A of my book "The Landscape of Theoretical Physics:
- > A Global View; From Point Particles to the Brane World"
- > (Kluwer Academic, 2001), in which I discussed many other
- > very interesting subjects. Here is a link to the Contents
- > of the book: <http://www-f1.ijs.si/~pavsic/Contents1Pdf>
- > where one can also find a link to the Appendix A:
- > <http://www-f1.ijs.si/~pavsic/Append.pdf>
- >
- >
- > Matej Pavsic
- >
- > Home Page <http://www-f1.ijs.si/~pavsic/>

---

• **References:**

◆ **On absolute units**

◇ From: Matej Pavsic

- Prev by Date: **Re: finding acceleration when given certain variables...**
- Next by Date: **Cosmological Quantum Units and Planck's Units**
- Previous by thread: **On absolute units**
- Next by thread: **Post to spr re "connections"**
- Index(es):

Re: On absolute units

- ◆ Date
- ◆ Thread