Ohm's law of the Universe and mass of the Universe

By Krunomir Dvorski

By dimensional analysis, it is possible to combine fundamental physical constants to produce basic units. Depending on the choice natural units may have physical meaning. For example, Planck units, presented below, use to derive constants relevant to Flipping theory.

The Planck length is defined from the speed of light in a vacuum, Planck's constant, and the gravitational constant:

$$\ell_P = \sqrt{\frac{\hbar G}{c^3}} \approx 1.616252(81) \times 10^{-35} \text{ meters}$$

The Planck time is the time required for light to travel, in a vacuum, a distance of Planck length:

$$t_P = \sqrt{\frac{\hbar G}{c^5}} \approx 5.39124(27) \times 10^{-44} \text{ s}$$

The Planck mass is defined as:

$$m_{\mathrm{P}} = \sqrt{\frac{\hbar c}{G}} \approx 2.17644(11) \times 10^{-8} \text{ kg, (or } 21.7644\ \mu\text{g)}$$

From these Planck units I simply performed the following constants.

The space-time constant:

$$\Re_k = \ell_P t_P = \sqrt{\frac{\hbar G}{c^3}}\sqrt{\frac{\hbar G}{c^5}} = \frac{\hbar G}{c^4} \approx 8.71 \times 10^{-79} \text{ ms}$$

The mass-space constant:

$$\mho_k = m_P \ell_P = \sqrt{\frac{\hbar c}{G}}\sqrt{\frac{\hbar G}{c^3}} = \frac{\hbar}{c} \approx 3.518 \times 10^{-43} \text{ kgm}$$

And the mass-time constant:

$$\Im_k = \frac{m_P}{t_P} = \frac{\sqrt{\frac{\hbar c}{G}}}{\sqrt{\frac{\hbar G}{c^5}}} = \frac{c^3}{G} \approx 4.037 \times 10^{35} \text{ kg/s}$$

The first two constants $\Re_k$ and $\mho_k$ are candidates for chunks of property. The third constant $\Im_k$ is part of space of reality. Very soon you will agree with my opinion.

$\Re_k$ and $\mho_k$ are not relativistic. Lorentz factor as a function of velocity is not applicable to them. They are without any visible physical meaning. It is hard to imagine meaning of dimensions such as meter-second (ms) and kilogram-meter (kgm).

Third constant $\mathfrak{I}_k$ is derived by mutual dividing the first two constants. As well, Lorentz factor is not applicable. This constant is a very real and belongs to the space of reality. $\mathfrak{I}_k$ has the dimension of the mass flow (kg/s).

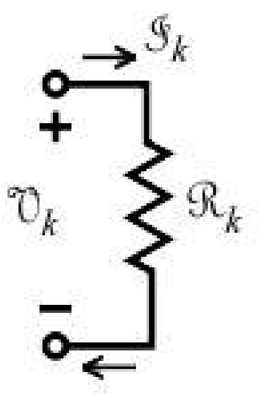

Figure 1: *Ohm's law of Universe*

Choosing symbols $\mathfrak{R}_k$, $\mathfrak{V}_k$ and $\mathfrak{I}_k$ is not coincidence. All three constants suggests the Ohm's law of the Universe:

$$\mathfrak{I}_k = \frac{\mathfrak{V}_k}{\mathfrak{R}_k}$$

Where are: $\mathfrak{R}_k$ the space-time resistance, $\mathfrak{V}_k$ the mass-space voltage and $\mathfrak{I}_k$ the mass-current (mass flow).

Is the mentioned mass flow meaningful? If there is meaning, what is it? The equation tells me that the mass of real space constantly growing with the mass rate of 4.037×10^{35} kg / s. This is equivalent to two hundred thousand suns in seconds, or about 1.4 million atoms of hydrogen per second and volume the size of Earth.. Of course, this matter is arranged over the whole Universe.

The mass-space voltage $\mathfrak{V}_k$ and space-time resistance $\mathfrak{R}_k$ operate from space of property. The mass current $\mathfrak{I}_k$ is part of space of reality.

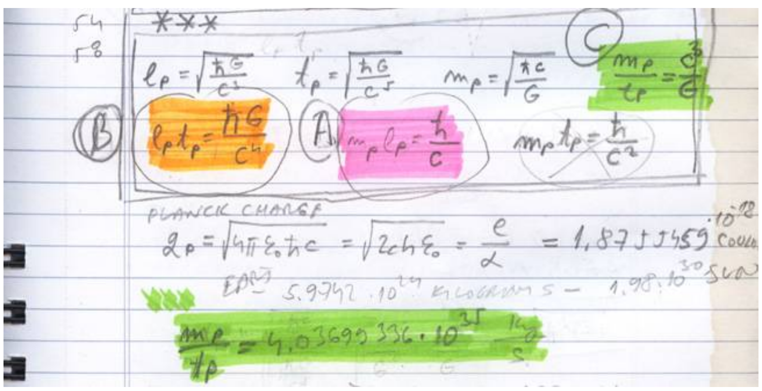

Figure 2: Krunomir Dvorski - Original handwriting

From mass current and age of the universe we can simply calculate the total mass of the Universe:

$$M_u = \mathfrak{I}_k\, t_u = 4.037\times10^{35}\ \text{kg / s} \times 13.7\times10^{9}\ \text{y} \approx 1.75\times10^{53}\ \text{kg}$$

This value is approximately equal to the mass of the Universe calculated by other methods. Interestingly, the total mass of the Universe depends only on natural constants c and G and age of the universe:

$$M_u = c^3\, t_u / G$$

If this statement is true, I get the most accurate mass of the Universe with uncertainly 1%.

Portrait of Krunomir Dvorski:

Figure 3: *There is a stone in the Riverside Park in Cambridge where Krunomir rest after long walks. Formula on the stone is an artistic addition to symbolizing the discovery of Ohm's law of the Universe.*