New-Paradigm definition of the Electromagnetic Spectrum

(The traditional Electromagnetic Spectrum is based on the "vacuum" speed of light relating the radiation wavelength with the radiation frequencies. New-Paradigm physics proves its inappropriateness and replaces it with the naturally quantized Electromagnetic Spectrum. Below is the corresponding excerpt from the newest book by Peter Jakubowski "Unified Physics; which Einstein & co. dreamed of and is finally realised now".)

The unified quantum interpretation of the electromagnetic spectrum of radiation (based on the Unified Physics) identifies the tropopause as the most probable place for the origin of the terrestrial life.
(See also: http://www.naturics.eu/?p=1761).

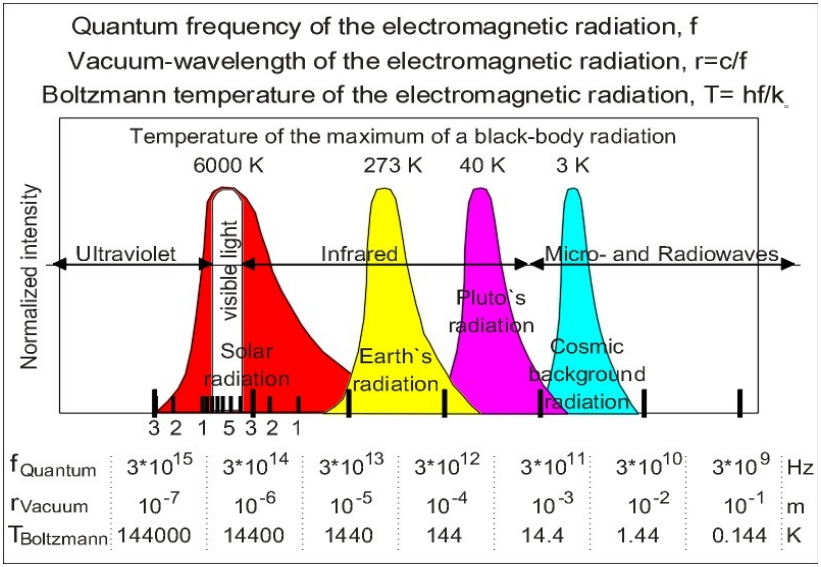

Figure A5_1. Traditional schematic presentation of the normalised black-body radiation of the Sun, Earth, Pluto, and the cosmic background radiation (CBR).

The traditional point of view upon the electromagnetic spectrum tries to unify the quantum frequency of the radiation with the vacuum wavelength of the corresponding waves and with the Boltzmann temperature of the radiation. However, neither the "traditional" sizes nor the "traditional" temperatures of the radiating quanta do really correspond with the quantum radiation frequencies. Against the suggestion of the above diagram, no known quanta of matter with a size of about 20-60 μm can be identified in the terrestrial atmosphere radiating the electromagnetic waves with a frequency of the order of 10 THz and having their temperature between 1200 K and 400 K.

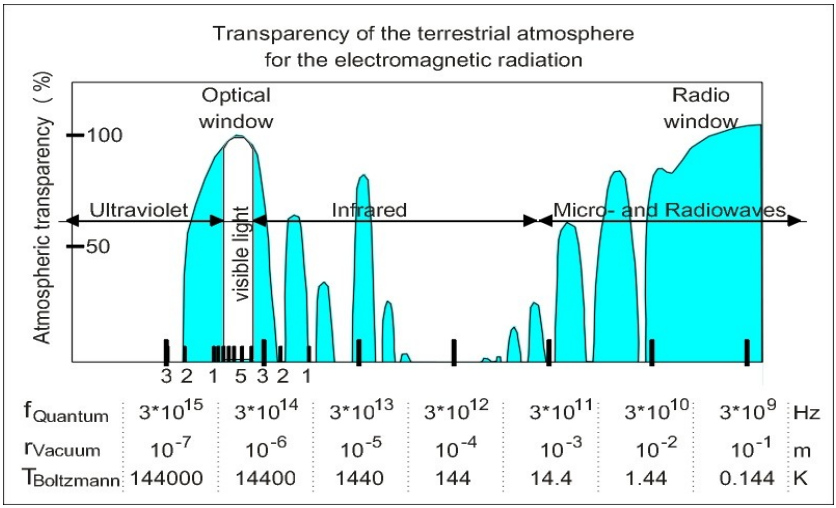

Figure A5_2. Traditional schematic presentation of the atmospheric transparency for the electromagnetic radiation from ultraviolet radiation until radiowaves.

Similarly, no quanta of matter with a size of about 20-400 μm can be identified in the terrestrial atmosphere absorbing the electromagnetic waves with a frequency between 10 THz and 1 THz and having their temperature between 1200 K and 60 K, located traditionally between the both transparency windows in the diagram above.

The above traditional definition of the electromagnetic spectrum produces the so-called vacuum version of this spectrum, because it uses the vacuum-speed of light as the constant coefficient for the whole range of the discussed frequencies. Therefore this version of the spectrum gives a realistic description of the corresponding relations in a single state only, namely in the vacuum. The Earth's atmosphere is surely not a vacuum however, thus the above traditional description is useless for any general purpose.

On the other side, it is quite naturally, that the Quantum Spectrum of Matter, as defined in the Unified Physics here (compare the main menu), describes the same electromagnetic spectrum in a realistic manner for all discussed frequencies, as can be seen on the "triple-quantum" scale below the Figure A5_3.

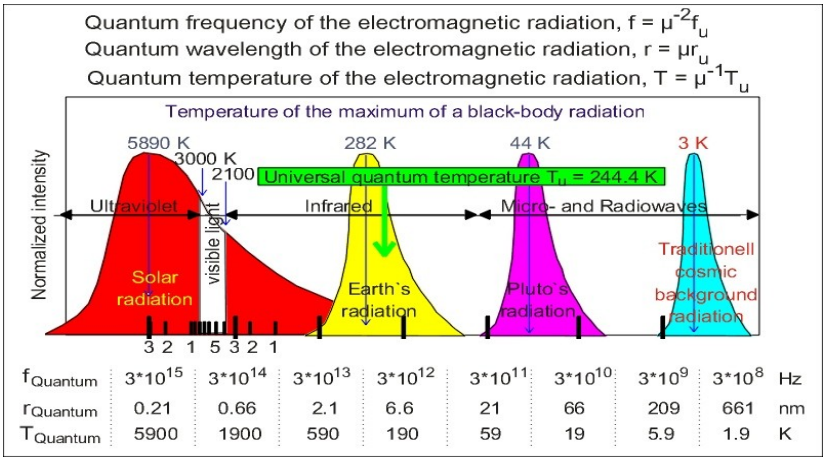

Figure A5_3. Unified quantum presentation of the normalised black-body radiation of the Sun, Earth, Pluto, and CBR.

The universal quantum temperature of 244 K (-29°C) is exactly the middle temperature of the tropopause, the boundary layer of the Earth's atmosphere between the troposphere and the stratosphere. The

universal quantum field (in the Unified Physics called the Field of Light) is the continuous origin of the inanimate as well as the animated matter. The largest quanta of the inanimate matter (with size of 1-5 nm) and the smallest quanta of the animated matter appear directly as the quantized fluctuations of this universal quantum field. The smallest quanta of the animated matter have the sizes between 5 nm and 20 nm. Their corresponding characteristic quantum frequencies lie between 5 THz and 0.3 THz, and their characteristic quantum temperature lies between 244 K and 60 K, respectively.

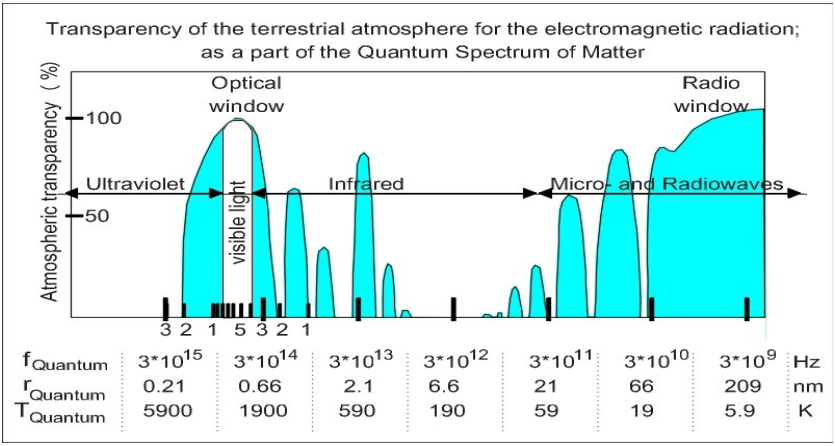

Figure A5_4. Unified quantum presentation of the atmospheric transparency for the electromagnetic radiation from ultraviolet radiation to radiowaves.

This means that the terrestrial tropopause is the first place, where we have to suppose the origin of the terrestrial life. These smallest quanta of the animated matter, the nanoparticles of life (which I propose to call nanoviroids, or maybe just nanoviruses) have the shape of a torus with some to plate compressed, elliptical cross-section, similar to the red blood-cells. However, the nanoviroids are much too primitive for to have any own DNA or RNA in that form as we know it today. The

nanoviroids are just the first step towards the higher developed forms of life. Together with the cosmic "wind" blowing mainly from outside of the Solar System they can reach the Earth's surface and start the process of the higher life development, according to the local and actual physical conditions there. How can we know that the nanoviroids should be present in the tropopause? One of the most direct answers can be reach by a consideration of the atmospheric transparency for the quantum electromagnetic radiation, as shown in Figure A5_4.

The region between the two traditionally named transparency windows (the optical window and the radio window) correspond exactly with the previously identified area of the nanoviroids, with dimensions between a few nanometer and 10-20 nm. This means that the main property of the tropopause should not be seen just as a transparency pause between two transparent windows, but exactly oppositely, as the absorption-shield preserving the favourable conditions to the evolution of the higher developed life on the Earth's surface, preventing it first of all from the harmful cosmic radiation.

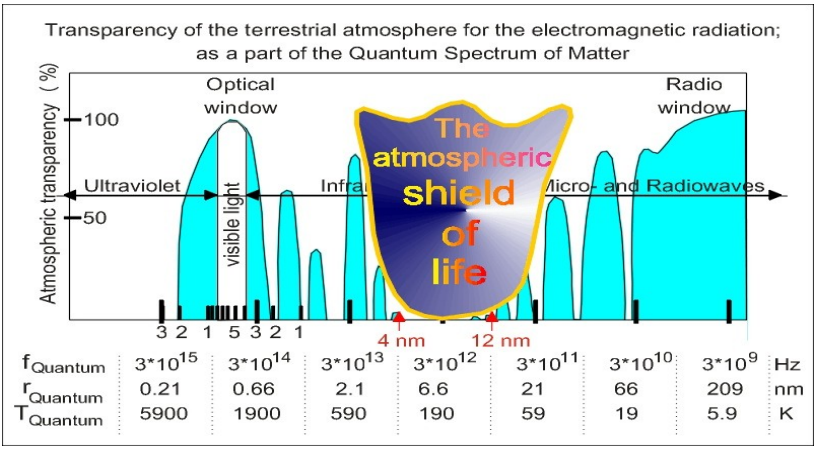

Figure A5_5. The unified quantum spectrum of the electromagnetic

radiation suggests an existence of the most primitive quanta of the animated matter exactly in that layer of the tropopause which absorbs the extraterrestrial radiation between the optical and radio windows of transparency. We call this absorbing property of the tropopause as the atmospheric shield of life.

In summary, we can say that **tropopause is the terrestrial living shield of life** (as illustrated in Figure A5_5).