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GAS TEMPERATURE, HEAT TRANSFER, PARAMETERS OF ELONS

Key words

Heat transfer, temperature, sound, speed of sound, radiation, ether, elon, gas laws, kelvin, gas constant, photons.

The Summary

Physical sense of gas constant should be understood as the ratio of one mole's energy of gas in joules to the temperature of one Kelvin. One Kelvin is the equivalent of energy of 1.381×10^{-23} j. When the energy of an amount of gas changes by one K, a molecule's energy of this amount changes by 1.381×10^{-23} j. At room temperature (273.15 + 20) K one molecule's transfer motion energy is 4.048×10^{-21} j. Sound waves propagate in gas (at least approximately) with molecules' chaotic motion speed. Mass of elon is 9×10^{-38} kg, its diametric section area - $19 \cdot 10^{-48}$ m^2. Photons do not accomplish job of heat energy transfer. The heat transfer mechanism that the modern science associates with radiation, functions by the way of temperature equilibration in a mixture of baryon gases molecules and elons of the gaseous ether. Objects' luminosities may not testify their temperatures. In the nature there may exist different mechanisms of photons generation as well as photons of different modifications. Values of modern science temperature measuring do often lack physical sense.

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In my paper [1] based on analysis of the Ideal gas law there was formulated an idea that as the temperature of a gas volume there should be considered its energy distributed on the volume's mass, which in the end comes down to the fact that if an amount of gas is composed of equal mass molecules, and all of them have equal energies as the gas temperature there must be considered the energy of one molecule. Here one has to remember that gas molecule energy is composed from kinetic energy of transfer motion and kinetic energy of rotation about its own axis. The Ideal gas law accounts only for the energy of transfer motion and it looks true if one admits that the rotation energy does in some way depend on it. Real gases, for instance air, are mixtures of different mass molecules, but the molecules of such mixtures having the same temperatures they also must have equal kinetic energies of transfer motion. That is why gas mixtures molecules velocities have to be different: heavier molecules move slower, lighter ones – faster.

Gas constant R known from the Ideal gas law is 8.3144621 $j \cdot K^{-1} \cdot mol^{-1}$. I understand its physical sense as the ratio of one mol of gas energy in joules to the temperature of one Kelvin. Knowing that in one mol of

gas there exist 6.02×10^{23} molecules (Avogadro number), it is not hard to find the energy equivalent to one Kelvin.

K = 8.3144621 j.: 6.02×10^{23} = 1.381×10^{-23} j.

This means that if the temperature of an amount of gas changes by one K the one molecule's energy of this amount changes by 1.381×10^{-23} j.

At room temperature (273.15 + 20) K the transfer motion energy of one molecule will be 1.381×10^{-23} j. x 293.15 = 4.048×10^{-21} j.

Such a molecule may be a simple proton with mass of 1.67252×10^{-27} kg. Then at room temperature the velocity of its chaotic motion will be

$$v = \sqrt{\frac{2T}{m}} = \sqrt{\frac{2 \times 4.048 \times 10 \exp(-21)}{1.67252 \times 10 \exp(-27)}} = 2200 \text{ m/s.}$$

The speed of light being c=299 792 458 ms^{-1}, at room temperature in a gas composed with protons the proton's velocity will be 7.33×10^{-6} of speed of light.

If to start from the premise that air is composed of 78% of nitrogen, 20% of oxygen, 1% of argon, and 1% of water, and that a nitrogen molecule N_2 is 28 times heavier, an oxygen molecule O_2 is 32 times heavier, an argon molecule Ar is 40 times heavier, and a water molecule H_2O is 18 times heavier than a proton, then at a normal temperature nitrogen molecules would have velocity of 416 m/s, oxygen molecules - 389 m/s, argon molecules - 348 m/s, and water molecules - 519 m/s.

Sound propagation speed in gases depends of their temperatures. At 20°C on sea level the speed of sound is approximately 343 m/s [2], which is a value although unequal to the found air molecules velocities, nonetheless permits to conclude that the sound waves characterized by science as longitudinal propagate in gas at least approximately with the speed of chaotic motion of its molecules.

Incomplete correspondence of the found above molecules' velocities to the speed of sound might be in my opinion explained by the fact that air composing molecules have forms substantially different from spherical, which differences could restrain propagation of longitudinal waves. At the same time I express opinion that the speed of sound in a hypothetical proton gas has to equal the velocity of chaotic transfer motion of protons, as well as the velocity of light waves propagation in gaseous ether has to equal the velocity of the chaotic transfer motion of elons, which had already been expressed in my earlier papers.

The above expressed conclusions concerning gas temperatures and energies of molecules' transfer motion allow calculating mass m of one elon, namely: $m = \frac{2T}{v^2}$ = 2x 4.048×10^{-21} : $(3 \times 10^8)^2$ = 0.9^{-37} = 9×10^{-38} kg. Here T is the above calculated temperature or energy of a gas molecule (that has to be energy of one elon) at room temperature in joules, v – elon's velocity equated to the speed of light.

Electron's mass is 9.109534×10^{-31} kg, which means it is more massive than elon 10^7 times.

In my earlier paper [3] there was found a correlation between mass and cross section area of spherical bodies (such as electrons and protons). According to the found correlation one kg of electron or proton matter has to equal $2.11 \cdot 10^{-11}$ m^2. This means that the cross section area of elon has to be $9 \cdot 10^{-38}$ x $2.11 \cdot 10^{-11}$ = $19 \cdot 10^{-48}$ m^2.

If to suggest that any molecular gas, even composed with identical molecules is indeed a mixture of such molecules and gaseous ether elons, one might imagine with what colossal energy such ether might be provided. A certain analogy to a mixture of baryonic molecules and elons of gaseous ether one may find in a phenomenon known under the name “Brownian motion” if to suggest that the elons’ analogues were the molecules of liquid, and the gas molecules’ analogues were the particles of pollen.

Modern science is persuaded that radiation is almost the most significant form of heat energy transfer and that such transfer is effectuated by means of generation, transfer, and acquisition of photons by encountered matter, those photons, which physical sense still remains an object of unstoppable speculations. In my paper [4] there was disclosed a mechanism of photons formation in hydrogen molecule that is fully consistent with the famous Balmer-Rydberg formula. Nonetheless the question of how and where is hidden in a formed photon the heat energy had not found in the proposed mechanism its explanation, as well as in what way there might be effected the transfer of such photon’s energy to the encountered matter.

My further thoughts have led me to the idea that photons do not accomplish heat energy transfer functions and that the heat transfer mechanism that modern science associates with radiation functions in a principally other way. If a real gas volume V has a temperature T this means that each of its molecules has kinetic transfer motion energy also equaling T. Such energy must also have the elons of ether surrounding the molecules of the gas V. If the gaseous ether elons located beyond the volume V have a temperature different of T, between them and the elons of volume V will take place a heat exchange aimed to equalize energy of the elon gas. In parallel to the equalizing of the elons’ energy will go heat exchange between them and the gas molecules of the volume V, which if not to apply or remove heat to the gas molecules will result to their cooling or heating to the elons’ temperature in the surrounding space.

It might be worth to note that the energy exchange between a molecular gas and surrounding ether goes analogously to the energy exchange between it and electron gas, for instance in electric generators, transformers etc. and that the spreading of heat goes analogously to the spreading of electric potential in metallic conductors [5,6].

What a function do then photons fulfill? As has been indicated above kinetic energy of gas consists of transfer and rotation motion energies, the values of both being interconnected. Photon’s value being function of molecule’s rotation, it is also indicator of transfer motion kinetic energy. This is why spectral analysis rightly fulfills the role of a tool of its determining, and this is why scientists determine the temperature of such or other star by means of determining its luminosity.

The point however is how uniquely meaningful and stable could one estimate the functional interdependence between different gases and gas mixtures transfer and rotation energy components, and how determinative while appreciating energies of such mixtures, in particular those of gaseous ether and baryonic gases would be the rotational component of separate molecules. How to appreciate transfer motion energy of protons and electrons which according to my photon generation model do not have to generate them at all? How to appreciate temperature of ions?

How to appreciate temperature of luminescent gases? Or for instance if ions’ molecules appropriate higher rotation velocities, which might indicate to their very high temperatures, as for instance in solar corona, but moderate velocities of transfer motion, what must be considered as their temperature and such of the corona itself?

Quite possible is the existence of totally different photon generation mechanisms from those described in [4], as well as the existence of principally different types of photons such that in no way would be connected with heat transfer processes and which registration would in no way indicate objects' temperature.

That's why when reading for instance about temperatures in interstellar medium [7], such as 6000 – 10000 K in the warm neutral medium, 8000 K in the warm ionized medium, or 10^6 – 10^7K in the coronal gas involuntarily put the question: what could it mean, what a particle could move with such a velocity, what is this velocity, how many speeds of light does it contain, or what could signify the temperature of a billion Kelvin allegedly necessary to hold the carbon synthesis nuclear reaction?

Works of modern scientists suggest [8] that inside a star of category "white dwarf" is kept a temperature of 10^7 K. At such temperature the proton chaotic motion velocity might be

$v = \sqrt{\frac{2T}{m}} = \sqrt{\frac{2x1.381x10\exp(-23)x10\exp 7}{1.67252x10\exp(-27)}} = \sqrt{1.651x10exp11}$ =4.063x10^5 m/s,

which makes 0.00135 speeds of light.

Conclusions

1. Physical sense of gas constant should be understood as the ratio of one mole's energy of gas in joules to the temperature of one Kelvin.
2. One Kelvin is the equivalent of energy of 1.381×10^{-23} j.
3. When the energy of an amount of gas changes by one K, a molecule's energy of this amount changes by 1.381×10^{-23} j.
4. At room temperature (273.15 + 20) K one molecule's transfer motion energy is 4.048×10^{-21} j.
5. Sound waves propagate in gas (at least approximately) with molecules' chaotic motion speed.
6. Mass of elon is 9×10^{-38} kg, its diametric section area - $19 \cdot 10^{-48}$ m^2.
7. Photons do not accomplish job of heat energy transfer.
8. The heat transfer mechanism that the modern science associates with radiation, functions by the way of temperature equilibration in a mixture of baryon gases molecules and elons of the gaseous ether.
9. Objects' luminosities may not testify their temperatures.
10. In the nature there may exist different mechanisms of photons generation as well as photons of different modifications.
11. Values of modern science temperature measuring do often lack physical sense.

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