

ABOUT THE ENERGY SOURCE THE SUN

Slavik Avagyan

National Polytechnic University of Armenia, Gyumri Campus, Armenia

slavikavagyan@yahoo.com

Abstract

In the work, the mass of the Sun itself is substituted as the basis of the energy source of the Sun. Rather, the energy of its gravitational field. As you know, there are particles in outer space and, as it is believed, in each 1cm³ volume, on average, there is one hydrogen atom. Each body that is in this environment attracts these particles. Particles in the body's gravitational field acquire kinetic energy equal to

$$E = Mah, \quad (1)$$

which is then transferred to the attracting body (star, planet, etc.) in the form of heat. Rather, the kinetic energy of the particles is converted to thermal energy. In the formula M is the mass of a particle, *a* is the gravitational acceleration of a given body, *h* is the distance of a particle from a celestial body. As a result, hydrogen atoms penetrating into the body transfer their kinetic energy in the form of heat. Thus, celestial bodies (stars, planets) provide their energy with the field of attraction, which they have created by their own mass.

The same mechanism inside the Sun generates its colossal energy (temperature).

And why some of the celestial bodies are stars and some are planets? Since stars have a huge mass, the gravity of the star is so strong that it prevents the rapid removal of the resulting temperature. As a result, an excessively high temperature accumulates inside the stars, the destruction of atomic nuclei begins and colossal energy is released. And the star starts to "burn". According to the corresponding calculations, it turns out that the energy acquired by a celestial body from the attraction of hydrogen particles according to (1) is equal to

$$E = \int_{R^0}^{R_\infty} 10^6 m_H R_\infty R^0 GM r^2 4\pi r^2 (r - R^0) dr, \quad (2)$$

where R_∞ - is the assumed boundary of the field of attraction of bodies, R^0 - is the radius of the body, m_H - is the mass of the hydrogen atom, G is the gravitational constant ($G = 6.672 \times 10^{-11} m^3 \cdot kg \cdot s^{-2}$), M is the mass attracting body. To consider the proposed model reliable, we calculate the energy acquired by the Sun.

For the Sun we have: $M = M_\odot = 10^{30}$ kg is the mass of the Sun; $R_\odot = 6.96 \times 10^8$ m -the radius of the Sun. R_∞ -take the distance from the Sun to the planet Pluto, which is $R_\infty = 6 \times 10^{12}$ m. Then, according to formula (2), the energy received by the Sun will be $E = 5.1 \times 10^{32}$ ergs. And the total amount of energy emitted by the Sun per unit of time is equal to $E = 3.8 \times 10^{33}$ ergs.

Thus, for the Sun, the result is stunning — the energy acquired by the Sun and the energy emitted by the Sun are approximately equal. Thus, the proposed model about the source of the Sun's energy is substantiated by the fact that the energy acquired by the Sun and the energy emitted into the environment are equal.