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NUCLEAR PROCESSES IN THE ORGANISM OF THE PERSON AT DIRECT HIT OF THE PARTICLE OF EXTREMELY HIGH ENERGY.

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The summary

During lines of years cases of full combustion of people without the seen reasons of external influence have been fixed.

There are some hypotheses of an explanation of this phenomenon, one of which - influence of space beams on the person.

Researches of a stream of space radiation have shown, that energy of particles reaches 10^{20} eV. Such particles will freely penetrate through a magnetic field of the Earth down to a sea level.

Let's consider influence of a stream of protons with energy $E = 1020 \text{ эВ}$ on an organism of the person.

The quantity of substance gone by a proton at direct hit, it is possible to find from the following reasons.

We admit, that density of substance of an organism:

$$\rho = 10^3 \text{ kg / m}^3,$$

The linear size:

$$l = 1\text{m},$$

Then the quantity of substance gone by a proton:

$$t = 100 \text{ г/sm}^2.$$

Length of run of a proton, concerning strong nuclear interaction [1]:

$$\lambda = 70 \text{ г/sm}^2,$$

That is the proton tests about 2 interactions.

Factor Allocation of energy [2]:

$$K = 0,5,$$

Therefore the allocated energy from one particle makes:

$$\Delta W = 5 \cdot 10^{19} \text{ eV}.$$

At passage of a primary space particle to the environment as a result of strong, weak nuclear and electromagnetic interactions as a result of cascade processes the electromagnetic avalanche is generated.

The cascade of secondary particles ($N_s N_s$) develops in the environment under the law [3]:

$$\lg N_s = \lg \rho_{600} + 4,44 - \lg(b - 2) + 0,98b,$$

Where $b = \varphi(\theta, \rho_{600})$ the dependence determined from the data of measurement with value $\rho_{600} = (2,0-20,0) \text{ sm}^2$ in an interval of antiaircraft corners $\theta = 0^\circ - 45^\circ$:

$$b = 3,54 - 2,16(1 - \cos\theta) + 0,15 \lg \rho_{600}$$

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Values ρ_{600} in view of run of the absorption known from measurements, find from average function of spatial distribution ($\Phi_{\text{ИП}}$) of the charged particles [4]:

$$f(r) = \frac{N_0(b-2)}{2\pi r_0^2} \left(\frac{r}{r_0}\right)^{-1} \left(1 + \frac{r}{r_0}\right)^{-(b-1)} M^{-2} f(r) = \frac{N_0(b-2)}{2\pi r_0^2} \left(\frac{r}{r_0}\right)^{-1} \left(1 + \frac{r}{r_0}\right)^{-(b-1)} M^{-2},$$

Where r_0 - molar radius, on the average $r_0 \approx 70 \text{ m}$; N_s - the average of the charged particles describing ensemble of downpours with given ρ_{600} [5].

One proton can create up to 10^{11} secondary particles [3].

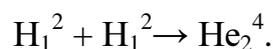
As a result of cascade development of an electromagnetic avalanche in an organism $\approx 10^8$ secondary nucleons and мезонов are formed. Thus, the allocated energy makes $\approx 10^{27} \text{ eV}$.

The density of a stream of secondary particles makes $\approx 10^5 \text{ m}^{-2}$. Then the allocated energy will make 10^{32} eV .

The quantity(amount) of atoms in the considered(examined) volume makes $\approx 10^{25}$, hence each proton gets energy $\approx 10 \text{ MeV}$.

Кулоновский the barrier to protons makes $E = K \cdot q^2 / r$, (1 MeV).

Hence, protons approach on distance less 1Fermi, that creates a condition for realization of reaction of thermonuclear synthesis:



Speed of a particle $v_0 = \beta C$, where relative speed $\beta = 1$, speed of distribution of an electromagnetic signal in v environment $v = C/n$, where $n > 1$. That is $v_0 > v$. As a result of its processes of thermonuclear synthesis are coherent, thus energy $\approx 10^6$ Дж is instantly allocated. That is there is a microthermonuclear explosion inside the considered volume. The temperature of environment will make $\approx 3 \cdot 10^3$ K.

As a result of occurring process there is a full burning out of the considered volume.

The conclusion.

It is uneasy to calculate probability of space attack for all mankind.

Intensity of a stream of primary particles with $E = 10^{20}$ eV makes $10^{-16} \text{ m}^{-2} \text{ c}^{-1}$ [3], that is $10^{-9} \text{ m}^{-2} \text{ year}^{-1}$. Hence, for all mankind on the Earth ≈ 7 cases in one year of direct hit in the person are possible.

THE LITERATURE

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