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Short Communication

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[Pandemic as the second stage of the extinction of our civilization](#)

In the twentieth century, the works of W. Wien, M. Planck and A. Einstein. Lord Rayleigh, Sh. Bose, L. Landau, M. Weinstein, Yu. Chukova and P. Landsberg [1-5] created a new science – quantum thermodynamics, which formulated the law of the efficiency of conversion of electromagnetic radiation into other types of energy for isothermal processes in open thermodynamic systems. This efficiency is of the greatest interest since the whole living world is a huge factory of isothermal processes.

Research Article

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[Oscillation of neutrino in a vacuum with mixing flavor](#)

We developed multiple equations to observe the two and three flavors of neutrino oscillation with the mixing angle based on $L/E=0.1$ to 0.9 in this study. In different settings, the nature of the neutrino oscillation probability was discovered to be varied in different equations. The observation indicates increasing likelihood in one equation and decreasing probability in the other equations in two flavor oscillation neutrinos. To characterize the probability of neutrino oscillation, we use four distinct angles: 50, 100, 150, and 200. The probability of neutrino oscillation was determined to be highest at an angle of 150 degrees. However, with increasing mixing angles, the likelihood of oscillation increases on the basis of created equation (25) and decreases on the basis of equations (26) and (27) in the three-flavor neutrino oscillation. From generated equations (25) and (26) the maximum neutrino oscillation of probability is discovered at an angle of 150, however, from equation (27), the maximum probability is observed at 50. The greatest neutrino oscillation is found to be 0.9999 and the minimum is zero in all of these two and three flavors of oscillation.

Mini Review

Published Date:-2022-05-03 16:55:22

[Harmonic oscillation picture of the free electron Zitterbewegung in vacuum](#)

As shown e.g. in ref.[1] Zitterbewegung (trembling motion) of the free Dirac electron is generated if transitions between positive and negative energy states occur. Here we treat this effect in a single-mode configuration using a density matrix method. As compared with more elaborate conventional treatments, this method allows an easy estimate of the amplitude of the motion. The result is by predicted spreads of the free electron charge.

Research Article

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[A Study of excitation functions in the interaction of \$\alpha\$ + \$^{59}\text{Co}\$ system at 4–9MeV/Nucleon](#)

In this work, γ -induced ^{59}Co reactions in the energy range from 11- 41MeV were used in order to study the role of pre-equilibrium emission. The experimentally measured excitation functions for residues populated via (γ, n) , $(\gamma, 2n)$, $(\gamma, 3n)$, $(\gamma, 2p)$, $(\gamma, 3n 2p)$ and $(\gamma, 4n 2p)$ channels in the interaction of $\gamma + ^{59}\text{Co}$ system available in the literature [13] were compared with theoretical predictions obtained using the statistical model code COMPLET. It was observed that at higher energy points the pure compound nucleus predictions, in general, failed to reproduce the measured data at projectile energies $\sim 11\text{-}41\text{MeV}$, this shows significant contributions from pre-equilibrium emission. The study signified both equilibrium and pre-equilibrium emissions were required to reproduce the presently measured excitation functions.

An attempt was made to deduce the contribution coming from pre-equilibrium emission. It was found that the pre-equilibrium contribution increases with increasing projectile energy. Furthermore, the present result revealed a strong correlation between pre-equilibrium contribution and particle multiplicity.

Opinion **Published Date:-2022-02-08 10:36:09**

[Laser spears for the Russian army](#)

The paper is devoted to the problem of high-energy solid-state laser arms, demonstrating the highest efficiency in the terms of weight and sizing. We can predict a very bright future for such laser systems as a significant means of defeating the enemy. The problem of scalability for such an approach based on fiber laser technology is the key question of our days for many companies of the world. At the same time, it is clear that a tactical LW based on solid-state technology with a weight factor of 5 kg / kW with the total weight of a laser complex significantly less than a ton can be created. But the level of output power around 500 kW is very close to the limit for the fiber technology...

Research Article **Published Date:-2022-01-25 11:56:48**

[A new theory on the shape of the universe and the origin of the time](#)

In this article, we have made a theoretical research, at the limit of the scientific reflection, to respond to the following query: what is the origin of the time? To find the response to this question, we adopted an attractive method. First, we have considered the light physical characteristics (speed, energy...) as the invariants. On this basis, we characterized all other physical systems by referring to the light. By this scheme, we showed that the calculation of the absolute physical characteristics of any system comes compulsory by the light viewpoint. That method avoids the use of mathematical transformations like Lorentz transformation; which is used in relativity to make invariant the equations by the change of the system of reference. Second, we made other hypothesis to find a law characterizing the interactions between matter and antimatter. Third, we used these interactions to quantify the time. The central query of this research led us to the shape of the universe and its volume. Finally, we found that the universe is a conical shape.
