The Early Universe Facts And Fiction Texts And Monographs In Physics

Conservation of energy

mechanics Laws of thermodynamics Zero-energy universe Richard Feynman (1970). The Feynman Lectures on Physics Vol I. Addison Wesley. ISBN 978-0-201-02115-8

The law of conservation of energy states that the total energy of an isolated system remains constant; it is said to be conserved over time. In the case of a closed system, the principle says that the total amount of energy within the system can only be changed through energy entering or leaving the system. Energy can neither be created nor destroyed; rather, it can only be transformed or transferred from one form to another. For instance, chemical energy is converted to kinetic energy when a stick of dynamite explodes. If one adds up all forms of energy that were released in the explosion, such as the kinetic energy and potential energy of the pieces, as well as heat and sound, one will get the exact decrease of chemical energy in the combustion of the dynamite.

The second law of thermodynamics establishes the concept of entropy as a physical property of a thermodynamic system. It predicts whether processes are forbidden despite obeying the requirement of conservation of energy as expressed in the first law of thermodynamics and provides necessary criteria for spontaneous processes. For example, the first law allows the process of a cup falling off a table and breaking...

Auguste Comte

important laws of the universe. Astronomy is the most simple science and is the first "to be subjected to positive theories". Physics is less satisfactory

Isidore Auguste Marie François Xavier Comte (; French: [o?yst(?) k??t] ; 19 January 1798 – 5 September 1857) was a French philosopher, mathematician and writer who formulated the doctrine of positivism. He is often regarded as the first philosopher of science in the modern sense of the term. Comte's ideas were also fundamental to the development of sociology, with him inventing the very term and treating the discipline as the crowning achievement of the sciences.

Universe

Wolfgang (1986). Essential relativity: special, general, and cosmological. Texts and monographs in physics. New York Heidelberg: Springer. pp. 193–244. ISBN 978-0-387-10090-6

The universe is all of space and time and their contents. It comprises all of existence, any fundamental interaction, physical process and physical constant, and therefore all forms of matter and energy, and the structures they form, from sub-atomic particles to entire galactic filaments. Since the early 20th century, the field of cosmology establishes that space and time emerged together at the Big Bang 13.787±0.020 billion years ago and that the universe has been expanding since then. The portion of the universe that can be seen by humans is approximately 93 billion light-years in diameter at present, but the total size of the universe is not known.

Classically, the conservation...

Gravitational waves transport energy as gravitational radiation, a form of radiant energy similar to electromagnetic radiation. Newton's law of universal gravitation, part of classical mechanics, does not provide for their existence, instead asserting that gravity has instantaneous effect everywhere. Gravitational waves therefore stand as an...

Higgs boson

The Higgs boson, sometimes called the Higgs particle, is an elementary particle in the Standard Model of particle physics produced by the quantum excitation

The Higgs boson, sometimes called the Higgs particle, is an elementary particle in the Standard Model of particle physics produced by the quantum excitation of the Higgs field, one of the fields in particle physics theory. In the Standard Model, the Higgs particle is a massive scalar boson that couples to (interacts with) particles whose mass arises from their interactions with the Higgs Field, has zero spin, even (positive) parity, no electric charge, and no colour charge. It is also very unstable, decaying into other particles almost immediately upon generation.

Stanis?aw Lem

human limitations, and humanity's place in the universe. His essays and philosophical books cover these and many other topics. Translating his works

Stanis?aw Herman Lem (Polish: [sta??iswaf ?l?m] ; 12 September 1921 – 27 March 2006) was a Polish writer. He was the author of many novels, short stories, and essays on various subjects, including philosophy, futurology, and literary criticism. Many of his science fiction stories are of satirical and humorous character. Lem's books have been translated into more than 50 languages and have sold more than 45 million copies. Worldwide, he is best known as the author of the 1961 novel Solaris. In 1976, Theodore Sturgeon wrote that Lem was the most widely read science fiction writer in the world.

The Evolution of Physics

The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta is a science book for the lay reader. Written by the physicists

The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta is a science book for the lay reader. Written by the physicists Albert Einstein and Leopold Infeld, it traces the development of ideas in physics. It was originally published in 1938 by Cambridge University Press. It was a popular success, and was featured in a Time cover story.

Writer

short stories, monographs, travelogues, plays, screenplays, teleplays, songs, and essays as well as reports, educational material, and news articles that

A writer is a person who uses written words in different writing styles, genres and techniques to communicate ideas, to inspire feelings and emotions, or to entertain. Writers may develop different forms of writing such as novels, short stories, monographs, travelogues, plays, screenplays, teleplays, songs, and essays as well as reports, educational material, and news articles that may be of interest to the general public. Writers' works are nowadays published across a wide range of media. Skilled writers who are able to use language to express ideas well, often contribute significantly to the cultural content of a society.

Influenced by Henri de Saint-Simon, Comte's work attempted to remedy the social disorder caused by the French Revolution, which he believed indicated an imminent transition to a new form of society. He sought to establish a new social doctrine based on science, which he labeled positivism. He had a major impact on 19th-century thought...

Gravitational wave

and black holes; events such as supernovae; and the formation of the early universe shortly after the Big Bang. The first indirect evidence for the existence

Gravitational waves are oscillations of the gravitational field that travel through space at the speed of light; they are generated by the relative motion of gravitating masses. They were proposed by Oliver Heaviside in 1893 and then later by Henri Poincaré in 1905 as the gravitational equivalent of electromagnetic waves. In 1916, Albert Einstein demonstrated that gravitational waves result from his general theory of relativity as ripples in spacetime.

According to all observations and current scientific theories, matter travels at slower-than-light (subluminal) speed with respect to the locally distorted spacetime region. Speculative faster-than-light concepts include the Alcubierre drive, Krasnikov...

Some of the earliest cosmological models of the universe were developed by ancient Greek and Indian philosophers and were geocentric, placing...

Faster-than-light

2023-08-24. Volovik, G. E. (2003). "The Universe in a helium droplet". International Series of Monographs on Physics. 117: 1–507. Zloshchastiev, Konstantin

Faster-than-light (superluminal or supercausal) travel and communication are the conjectural propagation of matter or information faster than the speed of light in vacuum (c). The special theory of relativity implies that only particles with zero rest mass (i.e., photons) may travel at the speed of light, and that nothing may travel faster.

Lem was the author of the fundamental philosophical work Summa Technologiae, in which he anticipated the creation of virtual reality, artificial intelligence, and also developed the ideas of human autoevolution...

The term "writer" is also used elsewhere in the arts and music, such as songwriter or a screenwriter, but also a stand-alone "writer" typically refers to the creation of...

Particles whose speed exceeds that of light (tachyons) have been hypothesized, but their existence would violate causality and would imply time travel. The scientific consensus is that they do not exist.

The Higgs field is a scalar field with two neutral and two electrically charged components that form a complex doublet of the weak isospin SU(2) symmetry. Its "sombrero potential" leads it to take a nonzero value everywhere (including...

Second law of thermodynamics

University Physics, 11th edition. Pearson. p. 731. Carroll, S. (2017). The big picture: on the origins of life, meaning, and the universe itself. Penguin

The second law of thermodynamics is a physical law based on universal empirical observation concerning heat and energy interconversions. A simple statement of the law is that heat always flows spontaneously from hotter to colder regions of matter (or 'downhill' in terms of the temperature gradient). Another statement is: "Not all heat can be converted into work in a cyclic process."

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