Three mathematical equations change the world

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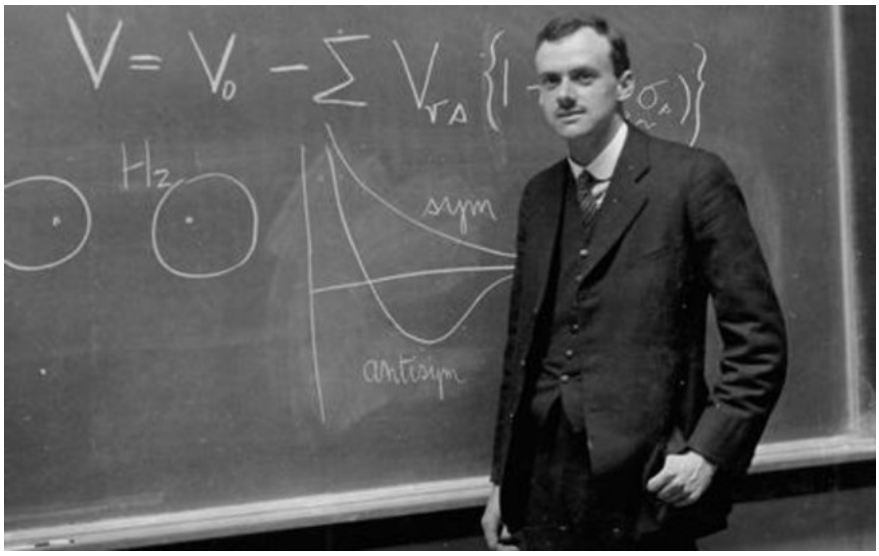
Equations Dirac

$$\left[i\hbar A^{\mu} \gamma^{\mu}_{(a)} \partial_{\mu} - m_0 c \right] \psi = 0$$

British physicist Paul Dirac (1902 - 1984) is the author of this equation. Paul Dirac was awarded the Nobel Prize in physics with Erwin Schrodinger in 1933, for the quantum hypothesis.



Physicist Paul Dirac.

Dirac's equation is used to calculate the motion of objects at the speed of light, with quantum mechanics described as the activity of very small molecules.

While looking for the equation to explain how electrons rotate when reaching the speed of light, Paul Dirac has initially proposed the quantum hypothesis and predicted the existence of antibodies, when physicists have not yet think or observe.

In addition, Dirac's equation also describes the delicate structure in the hydrogen spectrum in a very complex way.

The equation is also a theoretical correction by introducing wave functions containing some of the components of the British physicist Wolfgang Pauli's theory of rotation.

The wave function in Dirac's theory is the vector with four components that are complex numbers (also called bispinor). Two of them are similar to the Pauli wave function in the non-relativistic limit, different from the Schrödinger equation which describes the wave function with only one complex component. Moreover, Dirac's equation becomes the Weyl equation in case the volume is assigned to zero.

Initially Dirac did not fully appreciate the importance of this equation. However, with the consequence of explaining the motion of rotation in the unity of quantum mechanics with special relativity, Dirac's equation becomes one of the great achievements of theoretical physics.

The Dirac equation is the intellectual convergence of many famous scientists such as Newton, Maxwell and Einstein. In quantum field theory, Dirac's equation is explained in another sense to describe the quantum field corresponding to particles with rotational motion.

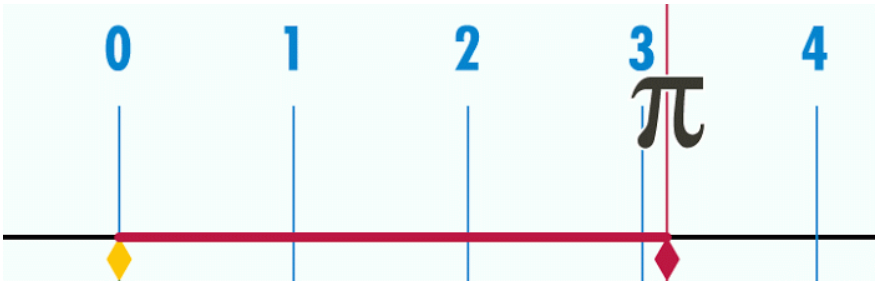
Euler formula

$$e^{i\pi}+1=0$$

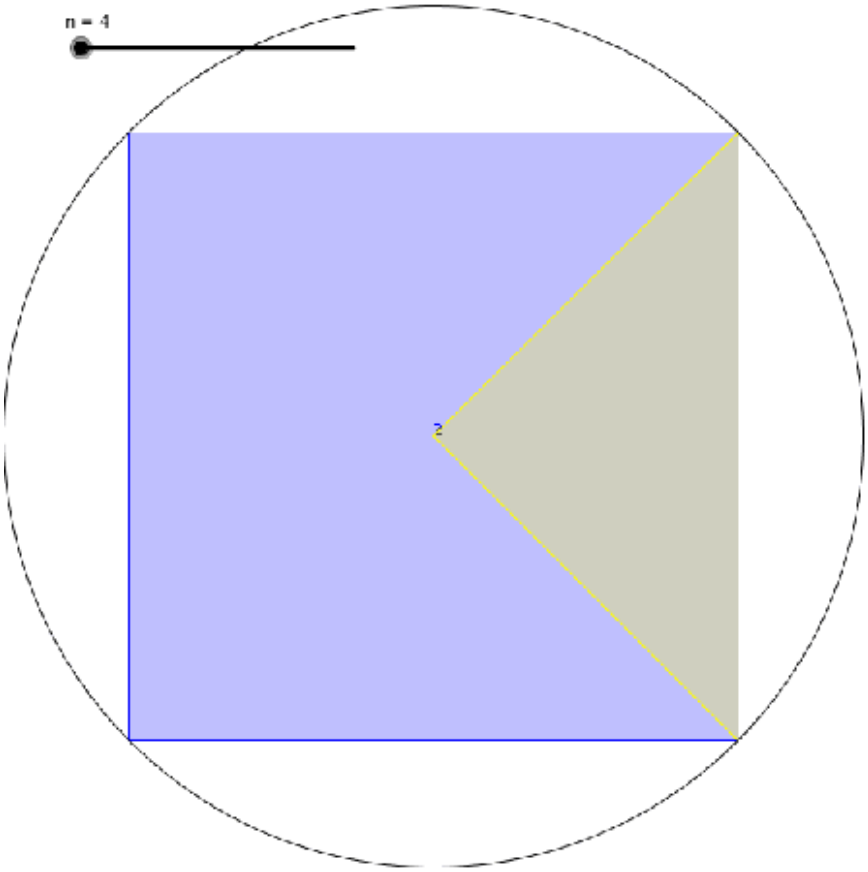
This is the mathematical formula of Leonhard Euler (1707-1783), a great Swiss mathematician.

This equation looks simple but acquires some of the most basic mathematical principles.

Pi number



Pi numbers are a universal learning curve that is familiar to all students in the world. The value of Pi is the ratio of the circumference of a circle to the diameter of the circle.



Pi has an approximate value of 3.14159, but it is also irrational.

Pi numbers help us discover planets, launch spacecraft, and even apply them to dual DNA helical properties.

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