



Paul Dirac

1902 - 1984

Awarded the Nobel Prize for Physics in 1933

Do you know what an **antiworld** is? Some believe that there are such things, made up of **antiparticles**. Each elementary particle has an antiparticle that has the same mass but an opposite electric charge. An electron's antiparticle, the positron, has the charge $+e$ and the same mass as the electron. A proton's antiparticle, the antiproton, is charged by $-e$. Antiparticles do not live long in our part of the universe since they quickly join their oppositely charged particles, causing an annihilation that converts all their mass into energy, often in the form of electromagnetic radiation. Perhaps there is a part of the universe made of antiparticles that have not annihilated and constitute **antiworlds** - but many scientists disagree.

Paul Dirac predicted the existence of positrons mathematically. Soon afterwards, in 1932, **the prediction was confirmed by the discovery of the positron** by the American physicist, Carl Anderson, during his studies of the cosmic radiation. Later, many other antiparticles were discovered.

Paul Adrien Maurice Dirac was a very great theoretical physicist and an impressive man. He was born in Bristol, England, on August 8th, 1902. His father, Charles Adrien Ladislas Dirac, came to Bristol from the French speaking part of Switzerland and took up a position as a teacher of French at a secondary school. His mother, Florence Hannah Dirac, was British. Paul had an elder brother and a younger sister.



*Travel
attracted
Dirac*



Matter



Anti-matter

*He was a brilliant
mathematician*

$$E = \pm \sqrt{m^2 c^4 + p^2 c^2}$$

Paul's primary learning began at the local elementary school. Apparently he had a rather unhappy childhood; his father was known to be a strict person and he forced the children to speak French at the table. That is why the small boy often did not speak at home - he did not find it easy to explain what he wanted in French.

Paul's mathematical ability became clear while he was a schoolboy. In 1918 he started education as a student of electrical engineering at the University of Bristol. After graduating he sought a job as an electrical engineer but failed and decided to take two more years of lectures on mathematics at the University. He was the best among all the students in the final examination and was awarded a postgraduate studentship by St. John's College, Cambridge. He obtained his PhD in 1926, followed by a Professorship there from 1932 to 1969. He was a quiet but effective teacher.

Dirac married Margit Wigner and they brought up two daughters from her previous marriage.

Travel attracted Dirac; he worked at many foreign universities. In 1929 he visited Japan and returned to England by way of Siberia (Russia). He was visiting professor of several American universities and in 1971 he became professor of physics in Florida State University.

In 1933 Dirac and Schrödinger were awarded the Nobel Prize for Physics.

S.E.