

Victor Franz Hess Biography

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Biography

Victor Franz Hess was born on June 24, 1883 in Austria. The son of a forest warden, he obtained a Ph.D. from the University of Graz in 1906 and was on the faculty of the Vienna Academy of Sciences.

Hess lived in an exciting time for physicists. At the end of the nineteenth and beginning of the twentieth centuries, discoveries about radiation were being made: Wilhelm Röntgen detected X-rays; Antoine-Henri Becquerel discovered radioactivity in elements in the earth; Marie and Pierre Curie discovered radium.

Scientists also had been detecting a puzzling radiation in the earth's atmosphere. An electroscope, a device used for detecting charged particles, would slowly develop an electric charge even though it was in a tightly sealed container. It was believed the radiation was coming from the ground as well as the air. Hess, in 1911, decided to undertake risky high-altitude balloon ascents with an electroscope on board to see if the radiation persisted in the atmosphere. He made ten trips (half of which took place at night to eliminate the sun as a source of radiation), reaching maximum altitudes of nearly six miles (10 km). He made his last flight on August 12, 1921 during a solar eclipse. To his surprise, the higher he went, the greater the radiation became, increasing to as much as eight times its surface level.

Hess was ready to suggest that the source of the radiation was outer space, but the phenomenon remained controversial until Robert A. Millikan confirmed Hess's hypothesis in 1928. Millikan showed, through a complex experiment, that the radiation had to be coming from space and coined the term cosmic rays to describe the emissions.

An entirely new class of particle, cosmic rays opened a new window into the cosmos. American physicist Carl Anderson's discovery of subatomic particles such as positrons and pi-mesons were directly related to the study of cosmic rays. Though their origins remained mysterious for many years, cosmic rays have come to be understood as an intense form of radiation emitted by supernova explosions and neutron stars.

For his work with cosmic rays, Hess shared the Nobel Prize in physics in 1936 with Anderson.