

Curriculum Vitae Professor Dr James Franck

Name: James Franck
Lived: 26 August 1882 - 21 May 1964



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James Franck was a German physicist. The Franck-Hertz-experiment, the Franck-Condon principle, as well as the Franck report are named after him. For his discovery of the laws governing the impact of electrons on atoms, he was awarded the Nobel prize in physics in 1925.

Academic and Professional Career

After graduating high school, James Franck studied for a short time at the University of Heidelberg, Germany and later physics in Berlin, where he earned a PhD in 1906. After his doctorate, Franck worked as an assistant at the physical institute at the University of Berlin. During this time, he focused his scientific work on elementary processes of gas discharge. In 1913/14, the findings of this research resulted in a cooperation with his five-year younger friend and colleague Gustav Hertz about electron collision experiments in gases. For that, both were later awarded the Nobel prize in physics.

During the first World War, James Frack served as a volunteer and was severely wounded during a poison gas attack.

In 1918 he became head of the physics section of the Kaiser-Wilhelm Institute for Physical Chemistry in Berlin. Two years later, he was offered the professorship on experimental physics at the second physical institute in Göttingen. This time saw much scientific research, amongst others on the discovery of collisions of first and second order, on the discovery of the transferability of atoms' excitation energy to translational energy and vice versa, the determination of the continua within the spectra of atoms and molecules, as well as the specification of the dissociation energy from spectroscopic data, which is important for chemical research.

His time in Göttingen was precipitously interrupted by the fascists' rise to power in Germany. In 1933, Franck was forced to retire from his office as head of the institute in Göttingen. In autumn he moved to Baltimore where he received a position at Johns-Hopkins-University. In the years 1934/35 he served as a guest professor in Copenhagen upon invitation by the physicist Niels Bohr, where he started to dedicate himself to photosynthesis.

In 1938, the Samuel Fels Foundation established a photosynthesis laboratory at the university of Chicago. Here he served as chair and professor for physical chemistry until his retirement in 1949.

After Franck received US-American citizenship, he was involved with the Manhattan Project to build an atomic bomb. In this context, he collaborated on the extraction of plutonium. However, after the German capitulation, he had moral concerns about the military employment of nuclear weaponry. He explained these in the 'Franck-report', together with other scientists from the university of Chicago that were involved in the Manhattan Project. He submitted the report on the 11th of June 1945 in person to the vice-secretary of defence George Harrison in order to prevent the release of the atomic bomb on Japan.

Nobel Prize

In 1912, James Franck and his assistant, the German physicist Gustav Hertz, started to investigate collisions between electrons and gas molecules. The basis for this research was the theory of gas discharge by Irish physicist John Townsend. Franck and Hertz hypothesized that it could be based on false assumptions. For their experiments, they used an electric tube that was filled with mercury gas. The experimental arrangement, that became known as Franck-Hertz experiment, proved the existence of a discrete energy level within atoms. This discovery supported the atomic model by Niels Bohr and contributed to the advancement of quantum mechanics. For this work, James Franck and Gustav Hertz were awarded the 1925 Nobel prize in physics. Even today, the Franck-Hertz experiment is firmly a part of any education in physics.

Honours and Awarded Memberships

James Franck received numerous other awards, amongst them the Max-Planck Medal of the German physical society (1951), the Rumford Medal of the American Academy of Arts and Sciences (1955), the Talanta Medal (1961), and the Dannie-Heineman Prize of the Göttingen Academy of Sciences (1962)

He was member of scientific organisations and academies, amongst them the American philosophical society (1927), the American Academy of Arts and Sciences (1929), the German National Academy of Sciences Leopoldina (1948), and the Royal Society London (1964)

Numerous colleges and universities awarded him honorary degrees, amongst them the Hebrew Institute of Technology in Haifa, Israel (1954), the Humboldt-University in Berlin, Germany (1960), the Christian-Albrechts University in Kiel, Germany (1961), and the Justus-von-Liebig University Giessen, Germany (1962).

About James Franck

James Franck was born on August 26th 1882 in Hamburg, Germany as the second child to the Jewish banker Jacob Franck and his wife, Rebecka Decker. He had an older sister, Paula, and a younger brother, Robert Bernard. Franck attended the classical-language oriented Wilhelm high-school in Hamburg, where he earned a degree in 1902. In 1911, he married Ingrid Josefson. The couple had two daughters, Dagmar and Lisa. The US-American physicist Frank von Hippel is a grandson of James Franck.

After the death of his first wife, he married his former assistant from Göttingen, Hertha Sponer, in 1949, who served as a professor for physics at Duke University in North Carolina.

James Franck died during a visit to Germany on Mai 21st 1964 in Göttingen.