

René Turlay 1932 – 2002

René Turlay, one of the four discoverers of charge-parity (CP) violation, died on 29 November 2002 after battling with serious illness for more than a year.

Following the advice of Jean Teillac, whom he met at the Radium Institute, Turlay joined the French Atomic Energy Commission (CEA) at Saclay as a research physicist where he was to have a brilliant career. In 1957, he joined the CEA's high-energy physics laboratory (created by André Berthelot), where he was welcomed by Paul Falk-Vairant and Georges Valladas. His first work with the Saturne synchrotron concerned the study of π meson production in nucleon-nucleon collisions at 2.3 GeV. In 1962, after completing his doctoral thesis on $\pi^- p \rightarrow \pi^0 n$ and $\pi^- p \rightarrow \pi^0 \pi^0 n$ reactions, he went to Princeton as a postdoc to work with Alan Clark, Jim Cronin and James Christenson on the resonant production of ρ^0 in $\pi^- p \rightarrow \pi^+ \pi^- n$ reactions. He subsequently played a major role in all phases of the memorable experiment at Brookhaven's AGS accelerator, where he, Christenson, Cronin and Val Fitch discovered the CP violation phenomenon in weak interactions. This unexpected discovery, made a year before that of relic radiation at 3 K, gave Andrei Sakharov a key to explaining the predominance of matter over antimatter at the extreme edge of the universe, and sowed the seeds of the model of the three quark families. Shortly before returning to France at the end of 1964, Turlay wrote to Falk-Vairant to underline that it was important to invest in the construction of two low-field wide-aperture magnets for the study of K mesons at Saturne. He was already demonstrating a talent for persuasion: when he arrived back, the magnets were ready, and between 1964 and 1967 he and his first students embarked on a series of experiments on long-lived neutral kaons. He invited his old friend Cronin to join them, and together they made preparations for the experiment to ensure that the Saclay Laboratory would benefit from the finest talents.

Turlay's widely established reputation brought him as a matter of course to CERN, where he undertook a series of experiments on rare disintegrations of K^+ mesons as part of an international collaboration. The results

obtained so long ago still stand, and serve as a reference for new experiments. 1973 saw the beginning of a long and fruitful collaboration with Jack Steinberger in the construction of the major CDHS (WA1) experiment for the study of interactions of high-energy neutrinos produced at the SPS accelerator. Turlay secured key participation in the CDHS collaboration for his group, and was tireless in his efforts to ensure undisputed quality in all fields. Over this productive period at CERN, he left an indelible imprint on the many students who came to work on their doctoral theses under his supervision. To ensure that the scope of their training was fully comprehensive, he joined Fitch in an experiment on the study of charmed mesons at Fermilab, which was followed by two others with Cronin and Bruce Winstein to measure the direct CP violation effect. From 1978 to 1979, he headed a group studying the physics potential of what were to become the HERA collider experiments at Hamburg.

When the decision was taken in 1980 to build LEP, CDHS formed the embryo of the future ALEPH experiment. Turlay played an active part in the difficult and stimulating R&D phase, so that his group would be involved in the great LEP adventure. It was he who advocated the advantages of the superconducting technology that would be successfully used in the design of the ALEPH solenoid. In 1984 he was appointed to head the department of elementary particle physics (DPHPE). Although this managerial challenge distanced him somewhat from the hands-on physics research that he loved, Turlay devoted himself wholeheartedly to this new task, ever mindful of the need to ensure that Saclay brought the best to the collaborations in which it was involved, especially in the case of CERN. CERN director-general Herwig Schopper's invitation to become chairman of the LEP Committee gave Turlay the opportunity to become actively involved in science once again, and to serve the interests of the high-energy physics community. Between 1991 and 1992, under the aegis of Robert Aymar, head of the CEA's sciences of matter directorate (DSM), he oversaw the transformation of the DPHPE into a larger department, DAPNIA, covering astrophysics, particle physics,



nuclear physics and instrumentation. On reaching retirement age, Turlay was appointed scientific adviser to DAPNIA and joined the NA48 collaboration at CERN, applying his passion and expertise to ensure participation by the best teams. With NA48, he took part in the precision measurement of direct CP violation in the neutral kaon system.

Turlay was a member of numerous international committees and learned societies (LEPC, SPC, SSC, IUPAP and SFP), often becoming their chair. He also helped to promote science among the young, and the recognition of the role of women in physics. He was awarded the Holweck Prize, and was made Chevalier de la Légion d'Honneur at the behest of the French Ministry of Research for the decisive role he played in the experiments, committees and associations in which he was involved. Turlay managed to arrange for the ceremony to be held at Saclay as a way of publicly expressing his heartfelt gratitude to the technicians, engineers and physicists who had made his work possible.

Turlay was not only a great and highly exacting physicist; he was equally capable of warm and sincere friendship. His worldwide stature as a physicist went hand in hand with enormous integrity and a genuine nobility of character. He continued to serve the cause of Saclay until the final days of his life, and will be sadly missed by all those who had the privilege of coming into contact with him. *Bernard Peyaud, on behalf of René Turlay's friends and colleagues.*