Shuji Orito 1941–2000

Shuji Orito, who was an extremely energetic and outstanding physicist in the international high-energy physics arena, passed away on 14 November at the age of 59.

Orito was a leading figure in electron-positron collider physics, but his quest for a deeper understanding of the universe also led him to a successful venture in particle astrophysics.

After studying physics at Waseda University in Tokyo, he became a graduate student of Masatoshi Koshiba at Tokyo, where he received his doctorate in 1969. His long association with Europe began in 1971, when he came to CERN to work with Carlo Rubbia.

With his early recognition that high-energy electron-positron collisions are of fundamental importance, he joined the pioneering experiment at Frascati’s ADONE collider. Here he devised a powerful method for searching for heavy leptons, but unfortunately ADONE just did not have enough energy to produce them, and they were eventually discovered two years later at SLAC by Martin Perl. Orito also pioneered the study of two-photon collisions – now routine physics at electron-positron colliders. In 1973 he moved to the German Max Planck Institute and joined the DASP experiment at DESY’s DORIS collider, where he discovered a new charmonium state.

After returning to Tokyo as a faculty member in 1975, he continued to work at European electron–positron colliders. He was a founding member of the JADE collaboration at PETRA at DESY and of the OPAL collaboration at LEP at CERN. He contributed to the success of these experiments both in the important physics analyses and in the actual detectors. It is impressive to see how reliably his electromagnetic calorimeters of thousands of lead-glass counters operated.

At the 1979 Lepton-Photon Conference in Fermilab, Orito was one of the four physicists who announced the discovery of gluons. He also played a leading role in vital electroweak measurements leading to the determination of the number of neutrino types and the prediction of the top quark mass.

Back in Japan, he led the Japanese community in a revolutionary proposal for the JLC-1 electron–positron linear collider in 1992. Starting at an energy as low as 300 Gev and with high-precision detectors, it covered all of the essential issues for a linear collider project. With the community’s great expectations for this project, he was elected chairman of the Japanese High Energy Physics committee in 1999.

Orito’s talents as an experimenter were also demonstrated in his recent balloon-borne experiment, BESS. He designed and flew a 1 tesla superconducting spectrometer to an altitude of 36 km to measure primary antiprotons, which could provide important information on the early universe. With more than a thousand antiprotons precisely measured, he was awarded the prestigious Nishina prize just two weeks after his death.

His originality was most recently evident in the design of a newly approved experiment at the Swiss PSI Laboratory to search for evidence of supersymmetry by looking for muon decays that violate conventional conservation rules.

A leading figure in the electron–positron collider world who had a clear vision of the future direction of high-energy physics, Shuji Orito had remarkable energy and enthusiasm to pursue important scientific issues. We lost him at the dawn of a new century and a new physics era, when his talents would have been absolutely vital.