

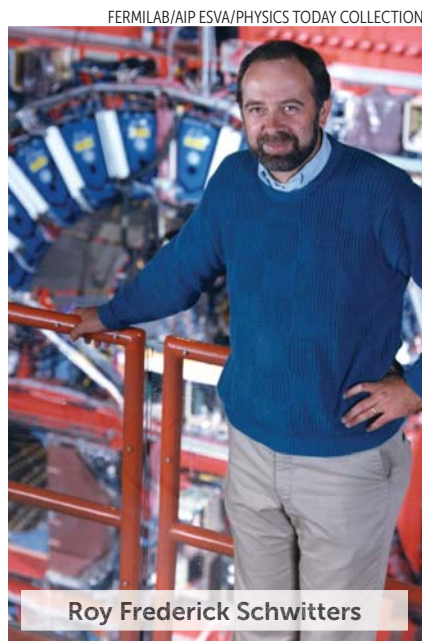
Roy Frederick Schwitters

Roy Frederick Schwitters, who served as director of the Superconducting Super Collider (SSC) project in Texas, died of cancer at his home on Orcas Island, Washington, on 10 January 2023.

An eloquent and dynamic physicist who played a major role in the 1974 discovery of the ψ particle at SLAC and subsequently led construction of the Collider Detector at Fermilab (CDF), Schwitters was selected to direct the SSC project in 1989. He led that increasingly contentious project until October 1993, when it was canceled by the US Congress.

Born on 20 June 1944 in Seattle and raised there, Schwitters developed an intense interest in physics during his undergraduate years at MIT, receiving his BS in 1966. He continued working in the laboratory of Louis Osborne, under whom he did his dissertation research on pion photoproduction and earned his PhD in 1971. His principal contribution to his thesis experiment (conducted at SLAC) was the development of a precision diamond target to produce polarized photons when struck by high-energy electrons.

That experiment brought Schwitters to the attention of Burton Richter, who hired him as a postdoctoral researcher on the SPEAR electron-positron collider



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then under construction at SLAC. In the process of working on the design and implementation of the SLAC-LBL (Lawrence Berkeley Laboratory) solenoidal magnetic detector, he determined how to surround the interaction point with cylindrical wire spark chambers to measure tracks of charged particles emanating from electron-positron collisions.

During the data analysis of a 1974 experiment on the collider and detector, Schwitters recognized that two runs at 3.1 GeV were far out of line, with cross sections that were 5–7 standard deviations higher than in other runs at that energy. He and others convinced Richter to remeasure that energy region in greater detail during a November weekend and discovered an extremely narrow resonance at 3.105 GeV that they dubbed the ψ particle—soon identified as a charm-anticharm quark pair. That surprise discovery was “easily the most thrilling event of our scientific lives,” recalled Schwitters.

After serving as an assistant professor and then associate professor of physics at SLAC, he joined Harvard University as a professor of physics in 1979, remaining in that position until 1990. During the 1980s Schwitters applied his deep understanding of collider-detector design to the CDF project, for which he led its construction and served as associate director and spokesperson from 1980 to 1988.

In 1989 the Universities Research Association, manager of Fermilab, named Schwitters as the director designate in its

successful application to become the SSC project’s management and operations contractor. Building the gargantuan, multibillion-dollar proton collider involved project-management challenges unlike any that high-energy physicists had ever encountered. Because of the political challenges of securing sufficient funding, Schwitters began spending much of his time in Washington, DC, lobbying on the project’s behalf.

After the SSC cancellation in 1993, Schwitters assumed a position full time as S. W. Richardson Regents Professor of Physics at the University of Texas at Austin, where he stayed until he retired in 2020. There he returned to experimental high-energy-physics research, focusing on B-meson physics. He also organized the Maya Muon project, which employed particle detectors sensitive to penetrating cosmic-ray muons to examine the innards of a Mayan pyramid in Belize for interior voids. In 1996 he joined JASON, a group of scientists that advises the US government on national security matters, chairing its steering committee from 2005 to 2011.

Schwitters was recognized with NSF’s prestigious Alan T. Waterman Award in 1980 and shared the 1996 W. K. H. Panofsky Prize of the American Physical Society for his contributions to experimental particle physics.

An avid mountain climber, Schwitters served as a Mount Rainier guide during summers as an MIT undergraduate. In retirement he returned to the Pacific Northwest and Orcas Island, where he had deep family roots.

Schwitters will be remembered as one of the principal figures who led high-energy physics into the collider era and pioneered the design of hermetic 4π detectors, which surround as much as possible of the solid angle around the collision point. His contributions have already had a lasting historical impact.

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