

OBITUARIES

Thomas Ferbel

The renowned high-energy physicist Thomas Ferbel, of the University of Rochester, passed away peacefully at his home in Friendship Heights, Maryland, on 13 March 2022.

Tom was born in Radom, Poland, on 12 December 1937. After frequently relocating during World War II, his family emigrated to New York in 1949. Tom attended the Bronx High School of Science and did his undergraduate studies in chemistry at Queens College, City University of New York, before switching to physics at Yale University, from which he received his PhD in 1963.

A summer program at Brookhaven National Laboratory inspired Tom to focus his PhD studies on experimental high-energy physics (HEP). The early 1960s was a uniquely propitious time to be entering the field. Brookhaven had recently begun operating the first high-energy accelerator using strong focusing, and it also had pioneering exemplars of the recently invented technology of liquid-hydrogen bubble chambers. The HEP group at Yale was ideally positioned to take full advantage of those unique opportunities.

Tom's studies at Yale were carried out under the guidance of Jack Sandweiss and Horace Taft, with the latter serving as his official adviser. His thesis work focused on proton-antiproton inelastic scattering without strange particles in the final state. In analyzing those data, Tom discovered the first evidence for production of baryon-antibaryon resonances.

After receiving his degree, Tom remained at Yale as a postdoc for two years before joining the University of Rochester as an assistant professor in 1965. Together with one of us (Slattery), who went to Rochester as a research associate in 1967, Tom built a highly successful bubble-chamber program, which proved especially suitable to adapt to new physics opportunities. In addition to discovering and investigating the properties of several hadronic resonances, their group was one of the first to study the systematics of one- and two-body inclusive reactions, a prelude to their subsequent work investigating multi-particle dynamics. They used the 30-inch

bubble chamber, which they had been early advocates for taking to Fermilab to provide an initial survey of that unexplored energy domain.

The Ferbel-Slattery group, with Rochester colleague Frederick Lobkowicz, subsequently turned their attention to studying radiative meson decays using the first liquid-argon calorimeter employed in the US for HEP experimentation. Several of the resulting measurements were either the first, or the most precise, such determinations at the time they were made.

The culminating phase of the Rochester group's liquid-argon-based experimentation involved measuring photons directly produced in hadronic collisions, as distinguished from those originating as decay products of other particles. Those measurements were made using the group's 3-m-diameter liquid-argon calorimeter, the largest such device in operation at the time. A principal result of the work was the demonstration of the importance of initial-state gluon radiation to the understanding of how direct photons are produced.

In the meantime, fundamental theories, such as the standard model and quantum chromodynamics, were being developed rapidly, moving the energy frontier from energies accessible to fixed-target experiments to collider experiments. In response, Tom joined the DZero experiment at Fermilab and was a major player in the discovery of the top quark.

Tom's many contributions to HEP were recognized by institutions and organizations around the world. He was selected for a Humboldt Research Award in 1994. He was a scientific associate at CERN, a guest scientist at the Central Design Group of the Superconducting Super Collider, and a visiting scientist at the Max Planck Institute for Physics. Tom held visiting professorships at the University of Paris-Sud and at the Johannes Gutenberg University Mainz and the University of Freiburg. He served as the manager of the US Department of Energy's physics program at the CERN Large Hadron Collider from 2004 to 2008.

For the American Physical Society, Tom served as the secretary-treasurer of the division of particles and fields in 1983–86 and on the editorial board of



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Physical Review D. He also was on the editorial board of *Zeitschrift für Physik (Journal for Physics) C Particles and Fields*. Tom served on program advisory committees at SLAC and Brookhaven and as chair of DZero's Institutional Board. Tom also was associate dean for graduate studies in Rochester's School of Arts and Sciences. With the other of us (Das), also at Rochester, Tom coauthored the widely used textbook *Introduction to Nuclear and Particle Physics* (2nd edition, 2003), which has been translated into several languages.

Tom was an inspiring teacher and an exceptional mentor of graduate students and postdocs. He not only personally advised 24 graduate students, some of whom went on to become highly successful in HEP, but also advised many graduate students officially supervised by his colleagues. Recognizing the educational difficulties confronting students working in HEP laboratories, Tom founded, and directed for 20 years, the biennial Advanced Study Institute on Techniques and Concepts of High Energy Physics, with all but one school held in Saint Croix, US Virgin Islands, and funded by NATO. Thus Tom had a major influence on an entire generation of high-energy physicists.

Most especially, Tom was a kind and large-hearted person whose presence will be greatly missed.

Ashok Das
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