OBITUARIES

Thomas Korff Gaisser

A scientific trailblazer with a phenomenal legacy, Thomas Korff Gaisser died on 20 February 2022 in Swarthmore, Pennsylvania, after a short illness. He was the Martin A. Pomerantz Professor Emeritus of Physics at the University of Delaware. Tom's friends and colleagues will remember him as a kind person and a giant in the fields of cosmic-ray physics, particle astrophysics, and multimessenger astronomy who supported and inspired his colleagues and the next generation of scientists.

Born on 12 March 1940 in Evansville, Indiana, Tom graduated from Wabash College in 1962 with a degree in physics. He then won a Marshall Scholarship to study in the UK. Sailing there on the *Queen Elizabeth*, he met another Marshall scholar, Julia (one of the authors of this obituary), whom he would later marry. He went on to earn an MS in physics at the University of Bristol.

Tom started his career as a theoretical particle physicist after obtaining a PhD from Brown University in 1967. Following postdoctoral positions at MIT and Cambridge University, he joined the Bartol Research Foundation (now the Bartol Research Institute), where he made the transition to cosmic-ray physics. He would often thank the Antarctic explorer and astrophysicist Martin Pomerantz for his support during that time. Tom's innovative research and engaging personality spurred many to follow his path from high-energy physics to particle astrophysics.

Tom helped prepare the theoretical groundwork for the physics of extensive cosmic-ray air showers. His work motivated others to develop state-of-the-art detectors that study with great precision the properties and origins of cosmic rays. And he contributed much insight to fundamental questions in particle physics.

Inspired by the first data from the Irvine-Michigan-Brookhaven and Kamioka experiments in the 1990s, Tom also laid the theoretical foundations for interpreting the physics of the atmospheric neutrino beam. His continued work on the subject, including his highly cited 1989 *Physical Review D* paper with Giles Barr and Todor Stanev, "Flux of atmospheric neutrinos," led to the successes of the present generation of atmospheric neutrino experiments.

Tom provided early calculations of the antiproton flux in the atmosphere, which is relevant for the search for new physics. He also predicted early gamma-ray and astrophysical neutrino fluxes. Among his other achievements was helping to develop the Sibyll simulation of cosmic-ray hadronic interactions.

Tom's far-reaching and innumerable contributions were internationally recognized. His awards include the 2005 O'Ceallaigh Medal, a Humboldt Research Award in 2009, and the 2015 Homi Bhabha Medal and Prize, given every two years.

But Tom is best known to many physicists for his book *Cosmic Rays and Particle Physics*, based on a one-semester course that he taught while on sabbatical at the University of Wisconsin–Madison and first published in 1990. Tom updated and expanded it with Ralph Engel and Elisa Resconi for a second edition, released in 2016. The book sits on the shelves of scientists and students around the globe and has served as an authoritative reference for a multitude of authors over the years.

As a founder of the IceCube Neutrino Observatory collaboration, which began construction in fall 2004, Tom was a leader whom everyone could count on. He was gracious and provided encouragement to many young scientists. He served the team in many ways, including as IceCube's spokesperson between 2007 and 2011.

Tom was also the soul of IceTop, the observatory's surface array devoted to cosmic-ray physics and used as a veto detector for neutrino detections. Although a theorist, Tom took on the experimental task of building IceTop with gusto and participated during every season of IceCube's construction. For several years he traveled to Antarctica, staying there for weeks at a time to participate in building the surface array. He delighted in the hard physical labor and the camaraderie of everyone—including mechanics, bulldozer drivers, and technicians—engaged in the project. IceTop and IceCube mapped for the first time the cosmic-ray anisotropy in the Southern Hemisphere and performed precision measurements of the cosmic-ray energy spectrum covering a range from 250 TeV to EeV, the largest energies that can be detected.

Thomas Korff Gaisser

RALPH ENGEL/KARLSRUHE INSTITUTE OF TECHNOLOGY

As an IceCube member, Tom also became an ambassador of Antarctic science in large part through a blog documenting his and his team's expeditions to the South Pole. In recognition of his work with IceCube, an area in Antarctica was named Gaisser Valley in 2005.

Tom published around 250 papers in scientific journals, but he was always especially proud of "Partons in antiquity," which he wrote with Julia, his wife of 57 years. Published in 1977 in the *American Journal of Physics*, the paper pointed out that the idea of confined quarks or partons as constituents of elementary particles was already present in the atomic theory of the ancient Greeks. Although the idea was his, Tom, in his typical fashion, insisted on having Julia listed as the principal author.

We thank Tom's many friends and colleagues for their contributions to this obituary.

Julia Gaisser
Bryn Mawr College
Bryn Mawr, Pennsylvania
Francis Halzen
University of Wisconsin–Madison

TO NOTIFY THE COMMUNITY
about a colleague's death, visit
https://contact.physicstoday.org
and send us a remembrance to post.
Select submissions and, space permitting,
a list of recent postings will appear in print.