Martin P. Reiser, Co-Founder

Laboratory for Plasma and Fusion Energy Studies

Died May 1, 2011

Professor Reiser received his doctorate in physics in 1960 from the Johannes Gutenberg Universität in Mainz, Germany, while working as a Research Physicist at the AEG-Forchungsinstitut Frankfurt (from 1958 to 1961) on the design of the sector-focusing cyclotron for the Karlsruhe Nuclear Research Center.

In the fall of 1961 to 1964, he was an Assistant Professor in the Physics Department of Michigan State University (MSU) and began collaborating with Henry Blosser on the design of a second-generation isochronous cyclotron for the acceleration of protons and heavy ions. "This new cyclotron paved the way for the establishment of the National Superconducting Cyclotron Laboratory (NSCL) and MSU in the 1980s," Reiser notes. From 1964 to 1965 he worked as a Supervisory Research Physicist at the Naval Radiological Defense Laboratory in San Francisco.

When offered a joint appointment in the Electrical Engineering and Physics departments as an Associate Professor at the University of Maryland College Park in 1965, the position appealed to Reiser on two counts. When hired at Maryland "It was expected that I would help the Physics Department with the design of the then most advanced variable-energy, multi-particle isochronous

cyclotron, under the direction of Harry Holmgren. At the same time, the cyclotron project would provide an opportunity for establishing a graduate program in accelerator design and charged particle dynamics in the Electrical Engineering Department. Particle accelerator science was at that time not yet a recognized discipline within the professional societies of the Institute of Electrical and Electronics Engineers (IEEE) and the American Physical Society (APS), and accelerator courses were taught at only a few universities associated with large dedicated facilities such as Berkeley, Cornell, and Stanford."

An important change in the focus of their research came in the late 1960s with the news that Russian scientists at Dubna had developed a new type of "collective" ion accelerator. "The news created great excitement in the West, and Electron Ring Accelerator (ERA) projects were started at Berkeley, the Max-Planck Institute in Garching and at Karlsruhe," Reiser recalls. "Together with Hogil Kim and Gus Zorn of the Physics Department, I formed an Electron Ring Accelerator study group and we came up with a new idea for the Ring formation that differed from that of the other labs." Their project received funding from the National Science Foundation in 1969. "The ERA was,

next to the cyclotron, one of the largest research projects on the Maryland campus at that time," Reiser continues. "It greatly enhanced our visibility and recognition and represented a major step in the development of a first-class electrical engineering graduate program in accelerator design and charged particle beam research."

The ERA project's initial home, though, was anything but first class; they were housed in a remodeled Quonset hut situated near the Animal Sciences Building. They set about building a pulsed-power electron beam generator in collaboration with the Naval Research Laboratory and assembling a top-notch technical staff including three researchers who are well known to the University of Maryland. Charles Striffler jointed them as a newly appointed assistant professor of Electrical Engineering; Moon-Jhong Rhee (Professor Electrical and Computer Engineering), and William Destler (Provost, UMCP) joined the group as a post-doc.

Professor Reiser also led the creation of the University of Maryland's applied electromagnetics and beam physics programs. Both nationally and internally, he played a major role in establishing particle beam physics as an academic discipline and was one of the leaders in the creation of the Beam Physics Division at the American

Physical Society in the late 1980s. He was promoted to Full Professor at UMCP in 1970.

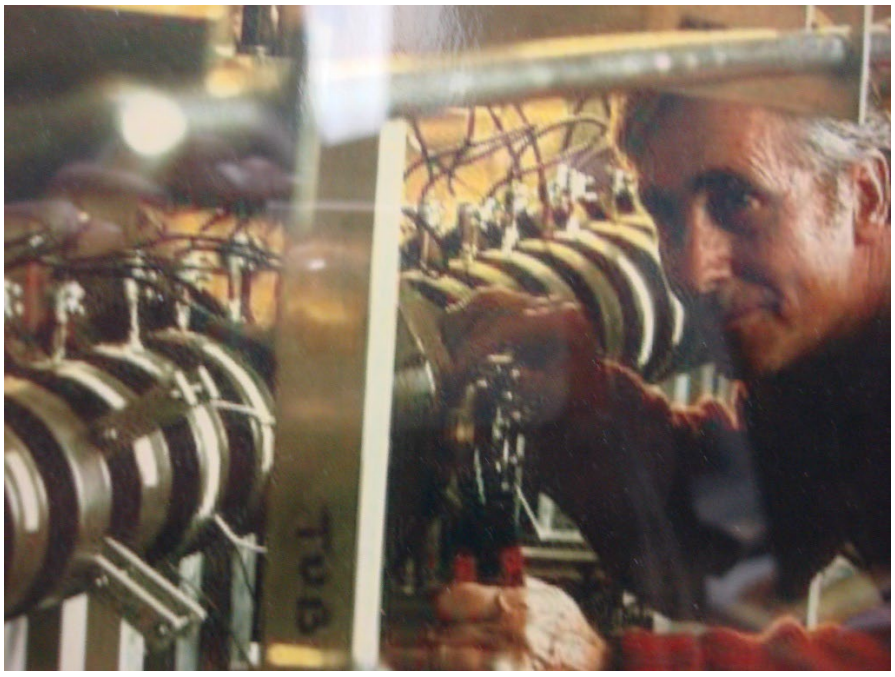
Professor Reiser's experimental and theoretical research was in the area of charged particle beam physics and accelerator applications in high energy physics, in the energy field (e.g., heavy-ion-driven inertial fusion), in material science, and in other areas. A major focus of the research with his graduate students and collaborators in the advanced accelerator field was the physics of space-charge dominated beams and sources of beam quality deterioration due to mismatch, lack of thermal equilibrium, nonlinear forces, instabilities, dispersion, and other effects.

Professor Reiser was the author or co-author of more than 200 research papers, co-editor of two books, and the author of the book "Theory and Design of Charged Particle Beams." He was a Fellow of the American Physical Society and the IEEE. He served as chair of the Executive Committee of the APS Division of Physics of Beams, and of the Program Committee for the 1997 Particle Accelerator Conference in Vancouver, and president of the Washington DC Chapter of the Alexander von Humboldt Association of America.

Professor Reiser retired in 1998 from his teaching position in the Electrical and Computer Engineering Department. He continued to work part time with his research group in the Institute for Research in Electronics and Applied Physics as a Senior Research Scientist.

Members of the ERA team in front of the Quonset Hut

Al Kehs, Craig Boyer, Unknown, Dan Hudgings, Martin Reiser, Bill Destler



Martin Reiser at the
Electron Beam Transport Experiment (EBTE)

Members of the UMER Team, April 2000

Front row: Mark Walters, Irving Haber, Yun Zou (2000)

Middle row: Renee Feldman, Donald Feldman, Patrick O'Shea (1985), Martin Reiser, Santiago Bernal (1999), Hui Li (2004)

Back row: Mark Wilson, Matt Virgo (2010), Bryan Quinn, Jonathan Newman (2005), August Valfells, John Harris (2005), Yupeng Cui (2004)

Martin Reiser, March 1999

Martin Reiser, 2000