To notify the community about a colleague's death, subscribers can visit http://www.physicstoday.org/obituaries, where they can submit obituaries (up to 750 words), comments, and reminiscences. Each month recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

Lowell M. Bollinger

Lowell M. Bollinger died on 25 September 2014 at age 91 in Harpswell, Maine. A groundbreaking nuclear physicist, he received the 1986 Tom W. Bonner Prize from the American Physical Society "for his contributions to and leadership in the development of the superconducting linear accelerator for the production of high-quality ion beams, a new technology that broadens the base for nuclear structure research."

Bollinger was born on 28 April 1923 in Greene County, Virginia, and was brought up in India. He received his BA in physics from Oberlin College in 1943, and then worked at the Aircraft Engine Research Laboratory until 1946. After World War II, he attended Cornell University. For his thesis research, he made one of the earliest underground cosmic-ray measurements and observed muons 600 meters deep in a salt mine. Bollinger's thesis adviser was Kenneth Greisen, who, together with Giuseppe Cocconi, oversaw his research in the mine.

After receiving his PhD in 1951, Bollinger joined the physics division at Argonne National Laboratory, and during his long, distinguished career there, he was instrumental in many areas of nuclear and accelerator physics. He pioneered gamma-ray spectroscopy, in which he established not only the systematics in the decay of neutron resonances but, more generally, the characteristics of the gamma-ray cascades by which complex nuclei decay. While developing one of the world's first fast-neutron choppers at the CP-5 (Chicago Pile-5) reactor, he did definitive work on the properties of neutron resonances and their capture widths. In 1955 in Geneva, he reported on that work as a US delegate to the first Conference on the Peaceful Uses of Atomic Energy, the first open meeting between US and Soviet scientists.

In 1963 Bollinger became director of the Argonne physics division, where he served for more than a decade. During that time he built up a strong staff that focused on nuclear-physics research—and Argonne continues to be a major center for that field.

Lowell M. Bollinger

Bollinger stepped down as division director in 1975 to lead a small group in exploring the possible applications of superconductivity for ion acceleration. The result was the first superconducting RF linear accelerator for subrelativistic particles. Designed to deliver high-quality heavy-ion beams for investigating nuclear structure, the linac used relatively small, independently controlled resonators capable of accelerating any ion species, from protons through uranium. That unique approach led to excellent beam timing, low emittance, and small energy spread, all of which greatly benefited nuclear-structure research.

To achieve that technological tour de force, Bollinger and his group first had to solve several accelerator-physics challenges. The extremely high Q of a superconducting resonator made phase and frequency control difficult. Bollinger and colleagues combined a slow frequency-tuning system and a fast reactance system to stabilize the resonator against vibrations and against slow thermal and pressure drifts; that combination also achieved the RF-field synchronization required to precisely control the acceleration of a continuous-wave beam. The team also developed a multistage harmonic buncher to shape the time profile of a DC beam to match the linac's acceleration window.

Bollinger's hands-on involvement in all aspects of the development, including setting up the required cryogenic system, was crucial. Under his leadership, the group first constructed a prototype—with patchwork funding from various sources—and then built a fully funded and successful accelerator known as ATLAS, the Argonne Tandem Linac Accelerator System. ATLAS has evolved in its capabilities and is a major international user facility for nuclear-structure research.

Following the innovative work of Bollinger, Ken Shepard, and their coworkers, researchers at numerous other nuclear-physics facilities throughout the world, including at Florida State University, Stony Brook University, TRIUMF in Canada, the National Institute for Nuclear Physics in Italy, and the Facility for Rare Isotope Beams under construction at Michigan State University, have used RF superconductivity for subrelativistic particle accelerators. The technology is also the basis of the high-intensity linac injector project at Fermilab.

We and the physics community will remember Lowell Bollinger for his high scientific standards, his innovative thinking, and his strong and effective hands-on leadership.

Richard C. Pardo
John Schiffer
Jerry Nolen
Argonne National Laboratory
Lemont, Illinois ■

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