NORMAN CARROLL KOON

oped the Green's function pseudoboson formalism for interpreting the ground-state and excited state spin wave results. That work illustrates an important characteristic of his career—that he was equally at home with experiments and complex theory.

As part of the early work on magnetic compounds, Koon, John Schelleng (NRL) and I (then with NSWC) performed extensive low-temperature measurements of the magnetic properties of rapidly quenched amorphous alloys of (rare earth) Fe_2 composition to examine the unusual temperature dependence of the coercive fields and the relationship of that dependence to the random magnetic anisotropy and its effect on the formation of microdomains. Those large coercive fields in turn prompted Koon to consider ways in which the low-temperature phenomena could be extended to temperatures of technological interest. Along with Badri Das, he soon discovered the outstanding permanent magnet properties of the rapidly quenched alloy $(Fe_{0.8}B_{0.2})Tb_{0.05}$ that resulted from a specific heat treatment. Their work led to their receiving a patent, the Federal Laboratory Consortium Award for Excellence in Technology Transfer and to a share of the 1986 APS Prize for New Materials.

Koon's intense interest in physical phenomena was contagious and was the catalyst for the productive and long-term collaborations outlined above. As one of those collaborators, I appreciated his patience in explaining concepts and learned a lot from his keen insight. He had a knack for conveying complex ideas that made them relevant and understandable.

Most recently, Koon had turned his attention to the exchange interactions in giant magnetoresistive thin film alloy systems. He developed a micromagnetic theory of exchange coupling between antiferromagnetic and ferromagnetic layers that correctly predicted the 90° angle between spin directions in the two layers. By extending the model, he could also explain the positive exchange-bias behavior observed in specific layered systems.

Koon's many innovative contributions earned him an international reputation as an expert on the magnetism of rare earth elements and on permanent magnetic materials. He also served the magnetism scientific community as an editor of the *Magnetism Conference Proceedings* (published in the *Journal of Applied Physics*) and as an organizing committee member for the conference and other workshops and international meetings.

Koon will be long remembered for his seminal role in providing the definitive insight into a number of previously baffling theoretical and experimental problems in rare earth magnetism. His death is a significant loss to the scientific community, and he will be greatly missed by his friends and colleagues at NRL and elsewhere.

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Frederick Lobkowicz

Frederick Lobkowicz, a professor of physics at the University of Rochester, died on 3 February 1998, following complications from a heart attack. An exceptionally versatile scientist, Fred was best known for his contributions to high-energy physics.

Born in Prague, Czechoslovakia, on 17 November 1932, Fred belonged to one of that country's noble families, whose roots in Prague and Vienna date back centuries. He received his physics diploma in 1955 at the Swiss Federal Institute of Technology in Zurich, where he also received his PhD in nuclear physics under the direction of Pierre Marmier.

In 1960, Fred moved to Rochester to work at the university's 130-inch cyclotron. Among his first achievements was his involvement with John Tinlot and Dan Green in the first design of a 10 GeV muon storage ring.

Fred's scientific interests went beyond physics and spanned a huge intellectual panorama that embraced formal mathematics, phenomenology of particle and nuclear physics, electronics, mechanical design and cryogenic engineering. He worked on backward hadron scattering at Brookhaven National Laboratory in the mid to late 1960s, and, when Cornell University's

FREDERICK LOBKOWICZ

10 GeV synchrotron became operational, he and Ed Thorndike started an intense effort in photoproduction studies in the late 1960s to mid 1970s.

Starting in 1976, Fred's main research interests were focused at Fermilab, where he and his collaborators constructed two large calorimeters for studing radiative widths of mesons and direct-photon production. In fact, Fred was the first to introduce liquid argon calorimetry at Fermilab. More recently, he contributed to the D0 experiment at the Fermilab Tevatron and applied his expertise in calorimetry to designing the complex cryostat that will house the barrel section of the liquid argon calorimeter that is being developed for the ATLAS experiment at CERN's Large Hadron Collider.

During his 38 years at Rochester, Fred guided many excellent students and postdoctoral fellows, who benefited enormously from his breadth of interests and his style of doing research. Fred also wrote with Adrian Melissinos a rigorous two-volume text on introductory physics entitled *Physics for Scientists and Engineers* (W. B. Saunders, 1975), and he served as chair of the university faculty senate.

With many interests outside physics, Fred was well versed in history, mathematics and philosophy. But he enjoyed physics most of all, was always quick to get to the core of any issue and delivered his persuasive arguments in an unforgettably booming voice and direct manner. His style and contributions will be missed by all of us.

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