

Obituaries

Victor John Emery

Victor John Emery, a leading many-body theorist and head of the condensed matter theory group at Brookhaven National Laboratory in New York, died on 17 July 2002 in Wading River, New York, as the result of amyotrophic lateral sclerosis (ALS), better known as Lou Gehrig's disease, which he had battled stoically for several years.



Victor John Emery

Born in Boston, England, on 16 May 1934, Vic earned a BSc in mathematics at the University of London in 1954. Under the supervision of Richard Eden, he received a PhD in theoretical physics from the University of Manchester in 1957 for numerical studies of nuclear structure. His experiences with an early digital computer likely persuaded him of the value of more analytical approaches.

After postdoctoral stints at Cambridge University's Cavendish Laboratory and at the UK Atomic Energy Establishment at Harwell, Vic spent a year on a fellowship at the University of California, Berkeley. Working with Andrew Sessler, he predicted pairing of the fermionic atoms in the quantum liquid helium-3 along the lines of the Bardeen-Cooper-Schrieffer theory of superconductivity, but with pairing in a state of nonzero angular momentum. That prediction (with refinements by others) was confirmed by the 1972 discovery of superfluidity in ^3He by David Lee, Douglas Osheroff, and Robert Richardson, who shared the 1996 Nobel Prize in Physics for that discovery.

Vic returned to England and spent three years as a lecturer at the University of Birmingham. He continued his interest in and analysis of liquid ^3He experiments. After then spending a year as a visiting assistant professor at Berkeley, Vic settled down at Brookhaven, where he initially continued his work on ^3He and ^3He - ^4He mixtures. His work on ^3He - ^4He with Martin Blume and Robert Griffiths led to a simple model of phase separation that is now standard in textbooks on statistical mechanics. Around that time, Vic's confidence in his own abilities was manifest in his assuming the leadership of an experimental cryogenics group involved in a variety of experiments associated with superconductivity and liquid helium.

Around 1970, Vic began to study the Kondo problem, which led to his investigations of the one-dimensional electron gas. In collaboration with Alan Luther, he found the exact solution of a class of model Hamiltonians and introduced methods and concepts that have become a paradigm for current approaches to strong-correlation effects in electronic systems. In particular, Vic and Luther introduced the separation of spin and charge, a concept whose implications beyond one dimension are now a central theme in condensed matter theory. For that joint work, they received the American Physical Society's Oliver E. Buckley Prize in 2001.

The discovery of high-temperature superconductivity in quasi-two-dimensional copper oxide compounds in 1986 initiated a highly productive period in Vic's career. One of his first contributions was to derive for the copper-oxide planes an extended three-band Hubbard model, from which he showed that the charge carriers are holes in $2p$ states of oxygen. Shortly thereafter, Vic began a prolific collaboration with one of us (Kivelson) by noting that holes doped into an antiferromagnet, as in the cuprates, have a tendency to phase separate. The long-range part of the Coulomb interaction frustrates macroscopic phase separation and leads to a state that can be viewed as a mixture of insulating and conducting regions on intermediate length and time scales. That idea provided a useful perspective for understanding various types of order—especially the stripe order found in certain high-temperature superconductors, nickelates, and manganites—and more general indi-

The physics department at the Pennsylvania State University welcomed three former research associates from other institutions as new faculty members this fall. **Deirdre Shoemaker**, previously at Cornell University, **Dezhe Jin**, from the Howard Hughes Medical Institute at MIT, and **Kenneth M. O'Hara**, from NIST in Gaithersburg, Maryland, are the new assistant professors.

Syracuse University recently hired three new assistant professors in physics. Joining the department in August were **Christian Ar-mendáriz Picón**, who completed a postdoc at the Enrico Fermi Institute and in the department of astronomy and astrophysics at the University of Chicago, and **Liviu Movileanu**, who was a postdoc in the department of medical biochemistry and genetics at Texas A&M University. Starting in January 2005 is **Britton Plourde**, currently a postdoc in the physics department at the University of California, Berkeley.

The astronomy department of the University of Texas at Austin has announced two new hires: **Shardha Jogee**, who joined the faculty in August as an assistant professor, and **Volker Bromm**, who will take his post as assistant professor next month. Both come to UT from the Space Telescope Science Institute in Baltimore, Maryland, where Jogee was an astronomer and Bromm is an Institute Fellow.

Tel Aviv University awarded this year's Raymond and Beverly Sackler Prize in the Physical Sciences jointly to **Andrea M. Ghez** and **Adam G. Riess** at a ceremony this past May. Ghez, professor of physics and astronomy at UCLA, was recognized for her "pioneering high-resolution infrared observations that provide evidence for, and establish the mass of, the supermassive black hole in the center of the galaxy." Riess, an astronomer with the Space Telescope Science Institute in Baltimore, Maryland, and an adjunct associate professor at Johns Hopkins University, was acknowledged for his "contributions to the observational study of distant Type Ia supernovae that reveal the accelerating expansion of the universe, and the possible existence of dark energy." The pair share the accompanying \$40 000 purse.

cations of a strong electronic tendency to form inhomogeneous states in a variety of highly correlated materials. Drawing on Vic's experience with the 1D electron gas, the pair proposed a mechanism for high-temperature superconductivity that relies on intrinsic electronic inhomogeneity. The existence of electronic inhomogeneities provides an explanation of the notably small superfluid density found in underdoped cuprates. The inhomogeneities also explain the remarkable superconducting fluctuations that contribute to some of the so-called pseudogap phenomena above T_c . Although the theory of superconductivity in the cuprates remains contentious, Vic's work continues to influence theoretical and experimental studies of these fascinating materials.

At Brookhaven, Vic's leadership tremendously influenced research in condensed matter physics. He spent terms as leader of the condensed matter theory group, head of solid-state physics, and scientific program head for the High-Flux Beam Reactor. A brilliant theorist, he had a talent for interacting with experimentalists that made the Brookhaven physics department an especially attractive place for staff and visiting experimentalists and theorists. He was generous with his time and extremely supportive of his colleagues. Vic was eager to discuss the latest experimental results and would willingly explain new theoretical ideas and repeat his explanations as many times as his colleagues needed.

Physics was central to Vic's life. Even in his last few years, he did not allow the physical challenges imposed by ALS to keep him away from his work. Outside of the lab, he was an avid swimmer (a water-polo player in his youth). He always took great pride in his family, including his wife, three children, and seven grandchildren.

We remember Vic for his open and forthright character. Despite his many accomplishments, he was not arrogant and was happy to discuss physics with any interested party. His friendship, guidance, leadership, and insights are sorely missed.

John Tranquada
Myron Strongin
Peter Johnson

*Brookhaven National Laboratory
Upton, New York*

Steven Kivelson
University of California, Los Angeles

Mario Iona

Mario Iona, emeritus professor of physics at the University of Denver (DU) in Colorado, died of a heart attack on 27 February 2004 in Denver. A prolific author, Mario devoted more than 60 years to the improvement of physics teaching.



Mario Iona

Mario was born on 17 June 1917 in Berlin, Germany. His father had been a student of Peter Debye and Max Born in Göttingen and was an industrial physicist who worked with x rays. Setting out on a career in physics, Mario entered the Theoretical Institute of the University of Vienna, in Austria. At the time, Austria had been annexed by Nazi Germany, but because he held Italian citizenship by birth, he was spared having to give the "Heil Hitler" salute to his professor at the beginning of each lecture. To keep his options open, he took most of the courses required for certification as a physics teacher. His studies, though, were hampered when the Nazis dismissed his major professor, Hans Thirring. Mario subsequently completed his PhD thesis on electron optics in 1939 under Roman Sönl. Having received a scholarship at the University of Uppsala in Sweden, Mario left Austria in 1939, one week before Adolf Hitler's army invaded Poland. Working with Ivar Waller, he carried out research on crystal vibrations. His parents had immigrated to Chicago; because of the U-boat menace to transatlantic ships, he later joined them in spring 1941, following a wintertime trip through Finland, the USSR, and Japan. Mario began work on neutron diffusion with Samuel K. Allison at the University of

Chicago. Because Mario had come from Germany, he lost his clearance to do research and subsequently became a teaching assistant and, later, an instructor at Chicago.

Mario joined Marcel Schein's cosmic-ray research group, which had conducted experiments in laboratories established by MIT on Colorado's Mount Evans. His work with that group led to his joining the DU faculty in spring 1946. From 1947 to 1982, Mario directed the DU High Altitude Laboratories, a premier site for the investigation of cosmic rays.

Mario's first publication in physics education, "On the Use of Units for Force and Weight in Physics Textbooks," which appeared in 1944 in the *American Journal of Physics*, was the start of his lifetime service with American Association of Physics Teachers committees that were charged with advancing metrication in the US and with educating students and the public on the correct use of SI (Système Internationale) units. He was a leader in AAPT and served for many years as representative from the Colorado-Wyoming section and as chair of the section representatives. Throughout his service to AAPT, he was a central figure in maintaining the academic vitality of the Colorado-Wyoming section.

Mario will perhaps be best remembered for his intrepid campaign to call attention to errors in physics textbooks, especially in precollege texts. His column *Would You Believe?* was a regular feature in *The Physics Teacher* for 24 years. Unfortunately, he never ran out of material for the column. For that work, Mario received AAPT's Distinguished Service Citation in 1971 and its Robert A. Millikan Award in 1986.

A consultant to many area school districts, Mario was also the president of the Colorado-Wyoming Academy of Science and adviser to the DU Society of Physics Students for 20 years and to the national organization of Sigma Pi Sigma for 40 years. He was proud of having installed eight Sigma Pi Sigma chapters in the western US. In the late 1950s, he created the Denver Area Physics Teachers, which continues to meet quarterly at DU as an informal gathering of high-school physics teachers. He arranged programs in which teachers could share their experiences and could hear about new developments in physics from invited speakers. Although Mario formally retired from DU in 1986, he remained active in physics education for another 15 years.