



Harriet L. Dinerstein

(1982) from Cambridge University. He is an associate professor at the Canadian Institute for Theoretical Astrophysics and a fellow of the Canadian Institute for Advanced Research.

Harriet L. Dinerstein (University of Texas, Austin) is the 1989 winner of the Newton Lacy Pierce Prize, an annual honor given to a North American astronomer under the age of 36 for outstanding achievement in observational astronomical research over the five years preceding the award. Dinerstein is being recognized for her research on the chemical compositions of galactic and extragalactic gaseous nebulae, novae and supernovae. The citation highlights her observational creativity in combining optical and infrared spectroscopic techniques to measure radiation from several different ionization stages of an element in order to determine its relative abundance. The elements Dinerstein has studied

Nick Kaiser



include helium, oxygen, sulfur, neon and nitrogen. The elemental abundances in nebulae offer important clues to understanding the evolution of the universe.

Dinerstein received her BS (1975) from Yale University and her PhD (1980) from the University of California, Santa Cruz. She is an assistant professor in the University of Texas astronomy department.

IN BRIEF

Tom Witten, currently a research associate at the Exxon Corporate Research Laboratory in Annandale, New Jersey, will join the faculty of the University of Chicago in September. Witten will be a member of the James Franck Institute and a professor of physics.

George Gamota recently became chief scientist of the Mitre Corporation's Bedford, Massachusetts, operations. He was previously president of Thermo Electron Technologies Corp of Waltham, Massachusetts, the R&D subsidiary of Thermo Electron.

OBITUARIES

Taro Tamura

Taro Tamura died of a heart attack on 10 October 1988, at the age of 65. He was a distinguished theoretical nuclear physicist who made important contributions to the theory of nuclear reactions and nuclear structure.

Tamura was born in Akita, Japan, on 12 July 1923. He earned an undergraduate degree in naval architecture from the University of Tokyo in August 1945. He would later mention this period of his life only to his closest friends, and even then usually only to call it "the darkest days of my life." One of his assignments was apparently to design a kind of manned torpedo or kamikaze submarine! When the war was over, he returned to the University of Tokyo to study physics, receiving a bachelor's degree in March 1949 and a PhD in August 1955. He was a research assistant at the Tokyo University of Education (now Tsukuba University) from 1953 until 1955. He was a postdoctoral fellow at the Niels Bohr Institute in Copenhagen from 1955 until 1957 and held a similar position at UCLA from 1957 until 1959. He then returned to the Tokyo University of Education as an associ-



Taro Tamura

ate professor, but he left Tokyo in 1962 to become a staff physicist at Oak Ridge National Laboratory. He came to the University of Texas as a professor in 1968, and remained there until the end of his life.

During his 38-year career in physics, Tamura published about 200 papers. His early work (1950-55) was mainly in cosmic-ray physics, but shortly after he joined the Tokyo University of Education he became interested in theoretical nuclear physics. Tamura's nuclear theoretical work was initially rather formal and mathematical, dealing for instance with the relation of nuclear collective coordinates to individual nucleonic coordinates, and with the application of group-theoretical methods to nuclear spectroscopy. In Copenhagen and at UCLA, however, he became impressed with the power of a phenomenological approach that combined formal precision with experimentally guided insights into workable approximations.

Tamura immediately appreciated the importance of electronic computers for the future of theoretical nuclear physics. At UCLA he witnessed firsthand the impact on that field of early optical model calculations. His move from Japan to Oak Ridge was motivated almost entirely by the computational power to which he would thereby gain access. At Oak Ridge he completed Jupiter, his famous coupled-channels program for the description of inelastic scattering of nucleons leading to excitation of collective vibrational and rotational states of nuclei. Over the years the program has found widespread use, not only in nuclear physics and chemistry but also in nuclear engineering and elsewhere. His article in *Reviews of Modern Physics* (37, 678, 1965)

summarizes both the theoretical work that led to the creation of Jupiter and the program's many applications.

In 1966 Tamura became interested in the theory of isobaric analog resonances, and this was one of the major factors that led him to transfer from Oak Ridge to the University of Texas. At Texas there was not only a large, fast computer but also a vigorous experimental program generating much novel data that shed light on the role such resonances play in nuclear reactions and scattering. Tamura was always eager to set up collaborations with experimenters in order to stay abreast of the very latest experimental work in the field. By 1970 he had begun to study a variety of reaction-channel-coupling effects in nuclear reactions, particularly those in which two neutrons are stripped out of the target nucleus. Expanding his interest in these effects to the field of heavy-ion reactions, by 1975 Tamura was doing immensely complex calculations that allowed coupling between many different reaction channels, with realistic, finite-range interactions.

During the same period he was working actively in nuclear structure theory. He developed a new formalism that allowed him to write down a realistic fermion Hamiltonian for the nucleus and then to expand it, term by term, in a boson representation. Such an expansion, though laborious, makes it relatively easy to calculate the properties of a wide range of different nuclei in a unified and consistent way, and for the rest of his life Tamura was occupied in pushing this complex and powerful method to its limits.

In the late 1970s Tamura became interested in the description of the continuum spectra of nuclear reactions in terms of multistep direct reactions, and he pursued this approach with characteristic vigor for the remainder of his career.

No one who ever saw Tamura at work could forget the sight. His energy and powers of concentration were genuinely impressive. He actually ran to the water fountain or to get his mail so as to provide the minimal interruption of his efforts. In person, he was unfailingly kind, gentle and modest. It was easy to get him to talk about physics, but very difficult to get him to talk about himself, and almost impossible to get him to review his own achievements. Students found him a never-failing source of inspiration, while colleagues and collaborators found him a never-failing source of workable ideas, compact formalisms and neat computational tricks.

His famous computer programs were models of compactness and clarity. He was an effective teacher, preparing unbelievably closely written lecture notes that seemed to explore every possible ramification of a subject. While a very quiet and private man, Tamura never shrank from getting actively involved in sometimes heated public discussions concerning the value of some theoretical approach or achievement.

Shortly after he came to Texas in the late 1960s he fell seriously ill. He recovered quickly, and seemed to work as vigorously as ever, while at home he developed a number of relaxing hobbies, including painting in oils and watercolor, growing roses and creating beautiful arrangements with them, and listening to classical music. His health remained good until the spring of 1988, when he began to suffer from fatigue and was hospitalized for pneumonia. Despite these setbacks, he planned a full summer of activities, including lectures in Japan, Italy and Czechoslovakia. A heart attack soon after his arrival in Japan put an end to those plans, and Tamura devoted his energies to getting well enough to resume his duties in Texas in the fall. Unfortunately, a final heart attack occurred within a month after his return to Texas, where he had plunged into his teaching and research duties with characteristic vigor. The night before his death he had stayed up past midnight working on lecture notes for a course.

During the final decade of his life, Tamura was passionately interested in furthering close scientific cooperation between the theory group at Texas and various groups and individuals in Japan. He frequently expressed his love for both his native land of Japan and his adopted land, Texas. He spoke of the new spirit of increasing economic and scientific competitiveness that had arisen in Japan as well as of the generous, friendly and independent spirit he found characteristic of Texans, and he delighted in bringing them together. Both Texas and Japan may find him irreplaceable.

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Lloyd P. Smith

Lloyd P. Smith, former professor of physics at Cornell University and research adviser to many industrial and government organizations, succumbed to a massive blood infection in Menlo Park, California, on 17 June 1988, at the age of 84.



Lloyd P. Smith

A native of Reno, Nevada, Lloyd graduated from the University of Nevada in 1925 with a degree in electrical engineering. His multifaceted career began with a transcontinental motorcycle trip to participate in the then-famous General Electric "Test School," where he (and his trombone) made quite a mark. At GE he became interested in doing graduate work in physics. After attempts to gain admission to an eminent Eastern institution, unsuccessful due to his "lack of classical languages," Lloyd was accepted into the physics program at Cornell, with the help of Willis R. Whitney of GE. He completed his PhD in 1930, and then became a National Research Council Fellow at Caltech and an International Research Fellow at Munich and Utrecht. He returned to Cornell in 1932 as an assistant professor, and he advanced to full professor in 1936.

With this broad training, his exceptional sense of the important in physics and his ability to identify gifted scientists, Lloyd played a seminal role over the next 20 years in building the Cornell physics department into a strong and diverse research and teaching department. Before World War II he brought Hans Bethe, his acquaintance from Munich, to Cornell, and, with Robert Bacher, catalyzed the development of nuclear physics there. He pioneered a course in mathematical methods in physics, and later, with another emigré, the mathematician Mark Kac, developed a curriculum in mathematical physics that continues today. After the war his recognition of new directions in physics and of the opportunity to recruit a new generation of outstanding physicists from the closing defense programs, together with his remarkable success at obtaining es-