

Memorial Resolution for Prof. Emeritus H. Pierre Noyes

Professor Emeritus H. Pierre Noyes, a founding member of the SLAC Theoretical Physics Group, died on September 30, 2016, in Stanford, California, at age 93.

H. (Henry) Pierre Noyes was born on December 10, 1923, in Paris, France, to William Albert Noyes and Katharine Howarth Macy, daughter of Jesse Macy. His father was a Professor of Chemistry at the University of Illinois. Pierre graduated Harvard University in 1943 with a degree in physics. While he was at Harvard, his roommate was Thomas Kuhn. Pierre was a reader of an early draft of Kuhn's now famous book "The Structure of Scientific Revolutions". After Harvard, Pierre served two years in the US Navy as Aviation Electronics Technician's Mate, where he worked on radar technology and developed a new design for naval radar antennae.

After his military service, Pierre began his postgraduate work culminating in a Ph.D. in 1950 at the University of California, Berkeley, in theoretical physics in 1950. His doctoral advisor was Geoffrey Chew (whose doctoral advisor had been Enrico Fermi). In 1951, Pierre began a term as an Assistant Professor at the University of Rochester, spending the first year as Fulbright scholar in Birmingham, England. During this period Pierre also worked on the classified Project Matterhorn, a magnetic fusion reactor at Princeton University.

In 1955, Pierre joined what was to become the Lawrence Livermore National Laboratory, where he worked under directors Edward Teller and Ernest Lawrence on computations related to the theory of nuclear fusion and nuclear weaponry. From 1956 to 1962, he served at Lawrence Livermore National Laboratory as the group leader of the General Research Group. Pierre became a leading expert on nuclear forces. His 1959 paper with David Wong on the low-energy description of the nucleon-nucleon interaction is a classic reference.

In 1958, Professor Freeman Dyson invited Pierre to work on Project Orion at General Atomics in La Jolla, California. The two had met during Pierre's involvement with Project Matterhorn. Project Orion was a visionary concept for powering interplanetary rockets by nuclear explosions. Very much of its time, this project was abandoned after the Test Ban Treaty in 1963.

In 1962, Pierre was invited by Wolfgang Panofsky to join the new Stanford Linear Accelerator Center (SLAC), where he helped to create the Theory Group and served as its first Administrative Director. He was the first theorist to be hired at SLAC. Pierre was destined to spend the rest of his career at Stanford, where he progressed from Associate Professor to Professor while at Stanford. He was awarded emeritus status on May 1, 2000.

Over the years, Pierre's physics work was focused on the low-energy strong, electromagnetic, and weak interactions of nucleons. He made important contributions to the analysis of the nuclear three-body problem, both in the general formalism for experimental extraction of effective parameters and in the specific theory of the interplay of nuclear forces in tritium. He also continued his work on the characterization of two-body nuclear forces. He developed very clever and accurate ways to integrate the Schrodinger equation for potential scattering and introduced a novel nonsingular integral equation for two-particle scattering.

Pierre's work with James Lindesay (now a Professor at Howard University), focused on finite particle number scattering theory. They developed a successful fully relativistic formulation of few particle scattering. They showed how particle pair creation can be incorporated into the finite particle formulation using an crossing channel identification properly inserted as a coherent channel. Noyes and Lindesay were able to demonstrate direct nonrelativistic correspondence of their formulation, including a demonstration in this context of an unusual three-body phenomenon introduced by Efimov in 1970. This "Efimov effect" was independently discovered by Pierre, who called it the "Eternal Triangle Effect"

Pierre's other Stanford graduate students in particle physics include Alex Markevich (SAP), George Pastrana (Orsus Research), and Enrique Zeiger (ECM).

Pierre Noyes served as Associate Editor of the Annual Reviews of Nuclear Science from 1962 until 1977. In 1979 Pierre received the prestigious Alexander von Humboldt U.S. Senior Scientist Award, primarily to continue his theoretical work on the quantum mechanical three body problem for strongly interacting particles.

In the 1960's, Pierre became an outspoken opponent of nuclear weapons within the physics community. Having come from a family with a strong Quaker background, he was naturally inclined against violence. He was a vocal opponent of the Viet Nam war and a leading participant in the protests at Stanford in 1968-9 against military research on campus. We thank him for his role in the current prohibition of classified research and the establishment of Stanford's open research environment. After Richard Nixon became president of the United States, Pierre became the first person in history to bring a lawsuit against a sitting president for his actions with respect to the war. That suit was dismissed when Nixon resigned from office in 1974. However, it remains a precedent for legal actions against sitting executives.

In the last years of Pierre's career, he increasingly devoted his time to the pursuit of the philosophical questions raised by quantum mechanics and the search for fundamental connections between particle physics and cosmology. In 1979, Pierre joined with John Amson, Ted Bastin, Clive W. Kilmister and A. Fredrick Parker-Rhodes to found the international Alternative Natural Philosophy Association (ANPA) at Cambridge University. Pierre was president of that organization until 1987. Under Pierre's influence, advisors to and participants in the group included such notables such as as Patrick Suppes, Michael Redhead, David Bohm, Geoffrey Chew, Chris Isham, John S. Bell, Karl Pribram, and others. Pierre was supportive of a large cadre of scientists actively examining physics at its most basic and foundational level. His own interests included attempts at understanding the hierarchy of the scales of fundamental interactions, hypothesizing on the nature of the gravitation of antimatter, and calculating the masses of fundamental particles using first principles. Tests of Pierre's unconventional ideas on gravitational interactions of antimatter are now being conducted at CERN.

About 1980, Pierre founded the Light Hearted Philosophy Group (LHPG) at Stanford, and held meetings in his home. Continuing throughout the 1980s and into the early 1990s, speakers ranged from Nobel Laureates to U.S. vice presidential candidates. In 1984, he

formed the ANPA West organization with David McGoveran. Pierre presided over yearly ANPA West conferences with the support and participation of Stanford's Pat Suppes. In later years, Pierre was increasingly interested in social and biological systems, which he worked on with Fred Young.

Pierre's social and political activism was internationally recognized. He continually stood for integrity, fairness, and an undying belief in a better future for humanity. A lifelong humanist and enthusiast for the scientific understanding of the world, he was always delighted to explain his theories a process that often left his listeners marveling. He will be missed by his many associates, students and colleagues, as well as many others who came to know and love him.

Pierre's wife Mary, a teacher and child therapist whom we remember for her sweet inclusiveness, passed away only six weeks after Pierre's death. H. Pierre Noyes is survived by his children, David Brian Noyes, Alan Guinn Noyes and Katia Hope Noyes.

Madam Chair, I have the honor, on behalf of a committee consisting of Prof. Michael Peskin and myself, to lay before the Senate of the Academic Council a Resolution in memory of the late H. Pierre Noyes, Professor Emeritus at the SLAC National Accelerator Laboratory of Stanford University.

— Prof. Stanley J. Brodsky