Peter Swerling

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The second established the Science Center, the first multidisciplinary sciences building in the college.

Karl's deep insights, friendly smile, and enthusiasm for physics will be missed by his former colleagues and students.

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Peter Swerling

Peter Swerling, a 20th-century Renaissance man who made enormous contributions to the field of radar, died of cancer on 25 August at his home in Santa Monica, California.

Born in New York City on 4 March 1929, Swerling spent his formative years as a precocious youth in the magical world of the movies. His father, Jo Swerling, was one of the most successful screenwriters of the era.

When Swerling was 10 years old, his father, recognizing the analytical gifts of his son, granted Swerling his birthday request to meet Albert Einstein. The awed youngster spent an hour alone with the professor and then the professor visited with the family for the day, because, apparently, even Einstein was fascinated by the gossip of Hollywood. He advised the boy to pursue his studies in mathematics; however, his parting words were to not forget the important things—like baseball!

Swerling entered Caltech at age 15, graduating three years later in 1947 with an undergraduate degree in mathematics. After graduating Phi Beta Kappa with an AB in economics from Cornell University in 1949, he received his PhD in mathematics from UCLA in 1955. While in graduate school, he was employed full-time by Douglas Aircraft, not on the assembly line for which he had applied, but as a member of the staff of the newly formed Project RAND, an assignment that was the start of a remarkable career.

PETER SWERLING

Best known for his work in radar during the heady days of the RAND Corp, Swerling was also a professor at the University of Southern California and a founder and president of Technology Service Corp. He served on the board of directors for a number of companies, and was a founder and long-term trustee of the Crossroads School, one of the most prominent K–12 private schools in Los Angeles. He also carried out Einstein's advice: Swerling enjoyed hang gliding and bodysurfing, much to the concern of friends and family. He loved opera, particularly Wagnerian opera, and Shakespeare, which he apparently had memorized, being only mildly upset when the Bard was misquoted at various technical meetings.

Swerling is perhaps best known professionally for the class of statistically "fluctuating target" scattering models he developed in the early 1950s to characterize the performance of pulsed radar systems. He extended Jess Marcum's work on statistical detection of steady targets in noise to include the important effect of statistical fluctuations of the target itself. Swerling's target models became an essential tool in the design of practical radar systems. The work was recognized immediately by the radar community, and the models, which have endured, are referred to as Swerling Target I, II, III, and IV in the literature of radar. Less well known (intentionally so, for reasons of national security) is the profound influence of more sophisticated target models Swerling more recently developed for application to targets using stealth technology. This work first became publicly known during the Persian Gulf War.

Swerling's work in the area of least-squares estimation and recursive signal processing was the precursor to Kalman filtering, a now ubiquitous signal-processing procedure used in the estimation and control of dynamic systems. Before Richard Kalman's work, Swerling published papers in 1958 and 1959 on "stagewise" smoothing, which were the first efforts to set up and exploit the computational

advantages of structuring least-squares estimation problems in a recursive setting.

Through his influence on former students and colleagues and his numerous publications, Swerling leaves enduring professional contributions achieved by few. He is sorely missed by all who knew him.

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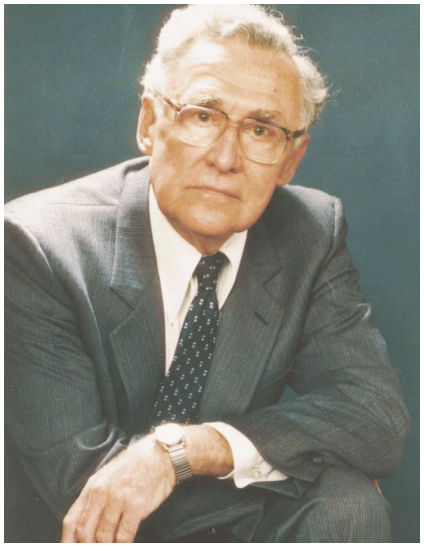
George Michael Volkoff

George Michael Volkoff, a theoretical physicist who, with J. Robert Oppenheimer, pioneered the physics of neutron stars, died on 24 April in Vancouver, British Columbia, Canada, after a series of strokes.

Born in Moscow, Russia, on 23 February 1914, George and his family emigrated to Canada when he was 10 years old. A few years later, his father, an engineer, could not find appropriate work in Canada, so the family relocated to Harbin, Manchuria, where his father taught at a Russian technical school. George returned to Vancouver in 1930 to attend the University of British Columbia (UBC). There, he earned his BA in physics in 1934. In the meantime, his mother died in Manchuria, and his father returned to Russia in 1936, only to be caught up at once in the maelstrom of the Stalinist purges.

George was a brilliant student. As a graduate student at the University of California, Berkeley, he wrote his first—and most famous—paper, "On Massive Neutron Cores," with Oppenheimer as coauthor. In this paper, published only a decade after the advent of quantum mechanics and a few years after the discovery of the neutron and the beginning of nuclear physics, George gave detailed calculations of stellar collapse—during a supernova—into a neutron star. After earning his PhD in physics at Berkeley in 1940, he investigated more topics in nuclear physics, including early work on tensor forces with Eugene Wigner at Princeton University.

George returned to UBC in 1940 as an assistant professor in the physics department and, apart from his war work, remained there for the rest of his career. In 1946, he was made a member of the Order of the British Empire. He also was awarded an honorary doctorate (in 1945) by UBC for his work on the theory of Canada's CANDU reactors during World War II.



GEORGE MICHAEL VOLKOFF

On returning to UBC after the war, he supervised the very first student to receive a PhD in any subject from UBC: Tom Collins, who later became an accelerator physicist with Fermilab. George also initiated a successful program in nuclear magnetic resonance studies. From 1961 to 1970, he was the head of the physics department, eventually becoming the dean of science from 1970 to 1979.

At the beginning of the cold war, he carried out important work as a liaison with Russian scientists, translating the talks, as they occurred, of the first Russian visitors to the early Rochester conferences. He also translated into English innumerable physics articles written in Russian.

George served as president of the Canadian Association of Physicists from 1962 to 1963. Although he had postulated the existence of neutron stars well before their discovery as pulsars, recognition of his work in this area came slowly. In the meantime, two of his initial colleagues, Oppenheimer and Hartland Snyder, had died. However, in 1994, George's earlier work on neutron stars was largely acknowledged by his appointment as an officer of the Order of Canada.

In his long career in physics, George developed a worldwide network of friends and admirers. He had a great gift for friendship, wide cultural interests, and a passion for music and mountains. And, with his wife and daughters, George provided hospitality to those with whom he interacted. He will be widely mourned and missed.

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