

tional and magnetic procedures to locate oil in rock formations.

Siebert had always been interested primarily in statistical mechanics, and he was one of the earliest experts in the use of random processes. When the wartime opportunity arose in 1942 to join the Radiation Laboratory at MIT to investigate noise and fluctuation problems, he accepted with enthusiasm. The MIT period, 1942-46, returned him to academic physics. From MIT, he went first to Syracuse University (1946-47), and then to Northwestern University, where he remained until his retirement in 1979.

Siebert was a serious, highly competent physicist with excellent taste. He made many isolated, but significant contributions, such as a well-known Siebert theorem, which relates charge and current matrix elements for electric multipole radiation. Siebert's 1949 paper interpreting the Boltzmann collision number assumption in a strict probability setting was a gem of precision. It clarified and elucidated many confusing points in the Boltzmann derivation, but unfortunately, these important results never found their way into a textbook. His profound studies connecting the partition function to random functions were instrumental in establishing the Kac-Feynman path integral method.

Arnold Siebert was quiet and reserved, and did not propagandize or advertise his own work. He was one of those individuals who, through their continual scholarly and scientific activity, carried out with devotion and integrity, helps ensure that physics evolves and advances. Siebert's efforts, struggles and successes are an integral part of the physics of the present times.

MAX DRESDEN
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Robert Betchov

Robert Betchov, an eminent fluid mechanician, passed away in Geneva, Switzerland, on 2 August 1996.

Born on 12 October 1919 in Geneva, Bob earned undergraduate degrees in mathematics (1941) and physics (1943) from the University of Geneva and a doctorate in theoretical physics from the University of Berne in 1945. Shortly thereafter, he joined the Swiss Army Laboratory as a physicist. In 1945, he moved to Delft in The Netherlands to become assistant head of the Center for the Study of Fluid Motions, where he developed his interest in fluid mechanics. In 1950, Bob came to the US as an assistant professor at the University of Maryland. Five

years later, he became a professor at Johns Hopkins University, where his teaching and research were centered on the study of theoretical and experimental turbulence.

In 1959, Bob joined the Aerospace Corp, a main think tank of the Department of Defense, where he headed an advanced projects department involved in the study of antiballistic missiles.

In 1963, I spent a summer with Bob and with Leslie G. Kovasznay at the Aerospace Corp, where we were the first to analyze successfully the stability of the free-shear layer through the massive use of computers. This joint effort provided the seminal idea for tackling all hydrodynamic stability problems using the numerical approach. Together with William O. Criminale Jr, Bob published a book, *Stability of Parallel Flows* (Academic Press, 1967).

At my encouragement, Bob went back to academia in 1965, joining the University of Notre Dame as an engineering professor. He returned to research through the use of computers; his favorite subjects were flow instability and turbulence. At Notre Dame, he was instrumental in the initiation of the informal "Friday Fluid Clinics," where he expressed himself passionately about his turbulence research. He impressed everyone he met with his brilliance and had little patience with mediocrity. His intimidating style of questioning was ever present for students and faculty alike.

Besides his teaching and research, Bob had another side, for he recognized the extraordinary power of technology both for peace and destruction. He was motivated by the words of Albert Einstein, Hideki Yukawa and Andrei Sakharov, who taught that peace could not be secured by fully sovereign nations but only through the delegation of part of their sovereignty to a world federal authority. Bob was an outspoken advocate for a weighted system of voting as an alternative to the one-nation-one-vote system.

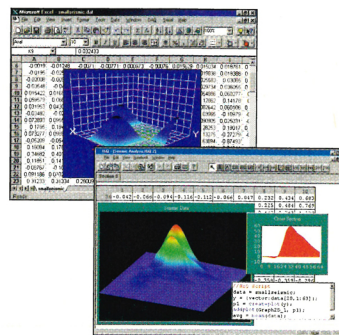
After his early retirement in 1980 for medical reasons, Bob was occupied with numerous computer experiments involving turbulent systems, solitons and smoke rings, as professor emeritus at Notre Dame, as well as making undiminished efforts in the cause of peace. He returned to Switzerland late in 1980. Members of the fluid mechanics community will sorely miss him for his invigorating style of presentation and his splendidly detailed presentations. His many colleagues, friends and students have lost a fluid mechanician with a very inquisitive mind.

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