

Obituary

William A. Kuperman, 1943–2024



William (Bill) A. Kuperman, former Acoustical Society of America (ASA) President and Gold Medal recipient, died at his home in La Jolla, California, on June 30, 2024, at the age of 81.

He was known especially for his work on ocean acoustics.

Bill was born in The Bronx, New York. After graduating from The Bronx High School of Science, he got a BS from Brooklyn Polytechnic, New York, before completing a master's degree at the University of Chicago, Illinois. He then joined the Acoustics Division at the Naval Research Lab (NRL) in Washington, DC, where he was mentored by R. H. Ferris. Recognizing Bill's talents, Ferris nominated him for an NRL Edison Fellowship that supported his PhD work at the University of Maryland, College Park, in statistical physics. He published a classic paper at NRL with Frank Ingenito that incorporated sea-surface roughness into waveguide propagation.

Bill spent 10 years at NRL before taking a trip to the NATO SAACLANTCEN in La Spezia, Italy, to install some of the NRL acoustic propagation models. He fell in love with the place that led to a new phase of his career as head of the Environmental Modelling Group. He published another classic paper with Ingenito, simulating ocean wind noise by coupling an infinite sheet of monopoles to the ocean waveguide. In another famous paper (with Finn Jensen), he showed how sound propagating upslope in a wedge led to beams of energy injected into the ocean subbottom.

Employment terms at SAACLANTCEN typically last 3-5 years so Bill contemplated his return to the United States. He saw there were important opportunities connecting ocean acoustic and oceanographic models. With changes in the Navy system, both areas had become seated at the Naval Ocean Research and Development Activity (NORDA) in Stennis Space Center, Mississippi. So Bill moved his family to New Orleans, Louisiana, taking the position as head of the Numerical Modeling Division.

In 1985, Bill returned to the NRL in Washington and became the senior scientist of the Acoustics Division. Here he did pioneering work on matched-field processing that uses the waveguide physics for source localization and environmental inversion.

In 1993, Bill was hired by the Scripps Institution of Oceanography, UC San Diego, La Jolla, California, as a professor and the director of the Marine Physical Laboratory. This started a 30-year career in academia where he supervised research, including many graduate dissertations. He developed new ideas with applications to time-reversal acoustics, underwater acoustic communications, adjoint methods, global sound propagation, and waveguide invariants.

He received many honors over his career, including the Pioneers of Underwater Acoustics Medal (1995) and the Walter Munk Award (2011). He was elected to the National Academy of Engineering (2004) and was also a SECNAV/CNO Chair for Ocean Science (2004).

He is survived by his wife of 54 years, Gaby Kuperman, children Mark and Rachel, and three grandchildren.

Selected Publications by William A. Kuperman

- Baggeroer, A. B., Kuperman, W. A., and Mikhalevsky, P. N. (1993). An overview of matched field methods in ocean acoustics. *IEEE Journal of Oceanic Engineering* 18, 401-424. <https://doi.org/10.1109/48.262292>.
- Jensen, F. B., Kuperman, W. A., Porter, M. B., and Schmidt, H. (2011). *Computational Ocean Acoustics*. Springer, New York, New York.
- Kuperman, W. A., Hodgkiss, W. S., Song, H. C., Akal, Ferla, C., and Jackson, D. R. (1998). Phase conjugation in the ocean: Experimental demonstration of an acoustic time-reversal mirror. *The Journal of the Acoustical Society of America* 103, 25-40. <https://doi.org/10.1121/1.423233>.
- Roux, P., Sabra, K. G., Kuperman, W. A., and Roux, A. (2004). Ambient noise cross correlation in free space: Theoretical approach. *The Journal of the Acoustical Society of America* 117, 79-84. <https://doi.org/10.1121/1.1830673>.

Written by:

Michael B. Porter porter@HLSResearch.com
Heat, Light, and Sound Research, La Jolla, California

William S. Hodgkiss whodgkiss@ucsd.edu
*Scripps Institution of Oceanography, University of California
San Diego, La Jolla*