

National Security Biographical Sketch

Dr. Frederick Lamb is a Research Professor of Physics, a core faculty member in the Program on Arms Control, Disarmament, and International Security, and Brand and Monica Fortner Endowed Chair of Theoretical Astrophysics Emeritus at the University of Illinois. For more than four decades he has actively participated in efforts to advance national and international security. He is an expert on space policy, military uses of space, ballistic missiles, missile defenses, anti-satellite weapons, and the technical aspects of nuclear test bans, verification of arms control agreements, and nuclear nonproliferation.

Since 1980, Lamb has served as a consultant on international security and arms control questions to the Department of Defense, the Arms Control and Disarmament Agency, the Congressional Office of Technology Assessment, and various Congressional committees, including the U.S. House and Senate Armed Services Committees and the Senate Foreign Relations Committee. He served for thirty years as a consultant to the Institute for Defense Analyses and has also been a consultant to U.S. national laboratories, including Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Sandia. He has served on numerous U.S. government panels concerned with national security issues.

In the late 1980s and early 1990s Lamb helped develop verification methods for underground nuclear explosions. He showed that the basic evolution of such explosions can be described by a semi-analytical scaling theory and, with other members of his research group, carried out some of the first multi-dimensional computations of the evolution of underground nuclear explosions. During this period he advised the U.S. Arms Control and Disarmament Agency on nuclear test bans and was a member of the small panel of experts who advised the U.S. test ban negotiators in Geneva in real time. He subsequently became one of the lead scientists for the U.S. test ban verification program.

During 2000–2002, Lamb served as a member of the American Physical Society's Panel on Public Affairs (POPA), and was a member of its national security subcommittee. In 2000, he was asked to chair a panel of POPA members and outside experts to explore whether a technical study of missile defense by the APS would be possible and valuable then. As a result of this panel's recommendations (see [Report of the American Physical Society Advisory Committee on Technical Studies of National Missile Defense](#)), the APS commissioned a study of land-, sea-, air-, and spaced-based boost-phase missile defense in 2001, co-chaired by Lamb. The study reported its results in an influential report that was publicly released in 2003 and published in 2004 (see [Report of the American Physical Society Study Group on Boost-Phase Intercept Systems for National Missile Defense: Scientific and Technical Issues](#)). This year, Lamb is leading a new study of U.S. missile defense and national security sponsored by POPA.

Lamb has also devoted substantial time and energy to informing students, the public, and decision makers about nuclear weapons, missile defenses, and national security, advocating for better programs and policies.

In 1981, Lamb initiated and co-developed an undergraduate course titled "Nuclear Weapons, Nuclear War, and Arms Control". This course has been taught every year since, usually by Lamb until 2013, when Professor Grosse-Perdekamp took over teaching it. The course continues to be taught every year, and is thought to be the longest-running course on this subject in the United

States. Approximately 3,000 students have now completed the course. Approximately 150 seniors and graduate students have been trained and then served as teaching assistants in the course. Many of them have gone on to pursue careers in national and international security and arms control.

Also during the 1980s, Lamb helped found, and later led, the Illinois Alliance to Prevent Nuclear War, a nonprofit organization open to the public that advocated measures to reduce the nuclear threat. During this period, Lamb gave more than 50 talks on nuclear and space weapons and arms control throughout the state of Illinois, supported by the Alliance. Lamb also provided advice, information, and support during this period to Illinois SANE, the Illinois Nuclear Weapons Freeze Campaign, and other arms control advocacy groups.

Lamb has appeared as an expert guest on many radio and television programs. During 1983, he presented a weekly television program, on a local television station, that was based on the content of his University of Illinois course "Nuclear Weapons, Nuclear War, and Arms Control".

During the past two decades, Lamb has given more than a dozen briefings on missile defense and space policy to U.S. House and Senate Armed Services Committee and Senate Foreign Relations Committee members and staff, to members of the Department of Defense and the Department of State, to governmental research organizations, and to senior military staff in the U.S. and Europe. He has also presented more fifty lectures on space weapons, space policy, missile defense, the North Korean and Iranian nuclear and missile programs, and arms control to national and international symposia, policy institutes, and the general public.

Lamb became a core faculty member in the University of Illinois Program on Arms Control, Disarmament, and International Security (ACDIS), now the Program in Arms Control and Domestic & International Security, in 1982, and has served on its executive committee.

During the mid-1980s, he helped organize and participated in ACDIS summer workshops for young journalists from the New York Times, Washington Post, and other national newspapers and magazines who were covering or had newly been assigned to cover national and international security issues. Lamb taught lecture-discussion sessions on nuclear weapons, nuclear war, and arms control at these workshops. During the past decade, Lamb participated in a series of summer workshops organized by ACDIS for graduating seniors and graduate students from across the United States interested in a career in international security, and gave lectures on reducing and eliminating the threat of nuclear weapons.

Lamb is a founding member of the recently formed APS-sponsored Physicists Coalition for Reducing the Nuclear Threat.

Lamb's physics and astrophysics research has focused on problems in high-energy and relativistic astrophysics and dense matter. He pioneered the study of neutron star cosmic X-ray sources and developed the standard theory of accreting X-ray pulsars. His modeling of the high-frequency X-ray oscillations produced by neutron stars has made possible accurate measurements of their masses and radii, exploration of strong-field general relativistic effects, and the most precise astrophysical measurements of the properties of ultradense matter that have been achieved to date.

Lamb received his bachelor's degree in physics (with honors) from the California Institute of Technology in 1967 and his D.Phil. in theoretical physics from Oxford University in 1970. He was a research fellow of Magdalen College, Oxford, and an instructor in physics at the University of Illinois from 1970 to 1972, when he became an assistant professor of physics at the University of Illinois. He became a professor in 1978 and in 1980 was also appointed professor of astronomy.

In 2005, Lamb was elected to membership in the American Academy of Arts and Sciences for his pioneering research in X-ray astronomy. He shared the American Physical Society's 2005 Leo Szilard Award for his leadership of the 2003 APS study of boost-phase missile defense.

Lamb is a Fellow of the American Physical Society and the Royal Astronomical Society (London), and a member of the American Astronomical Society and the International Astronomical Union. He has been a Marshall Scholar, a National Science Foundation Fellow, an Alfred P. Sloan Foundation Fellow, a John Simon Guggenheim Foundation Fellow, and a Carnegie Foundation Science Fellow in Arms Control.

In 1998 Lamb was chosen as the inaugural holder of the Brand and Monica Fortner Endowed Chair in Theoretical Astrophysics at the University of Illinois and was appointed the Director of the Center for Theoretical Astrophysics in 1999. He is currently a Professor Emeritus of Physics and of Astronomy, a Research Professor of Physics, and a core faculty member in the Program in Arms Control & Domestic and International Security at the University of Illinois.

Lamb is the author or co-author of more than 250 articles, monographs, and chapters in books on topics in physics, astrophysics, and national and international security.