

# Boost Phase Intercept Study Group Members - Biographical Summaries

*Any opinions, findings, conclusions, or recommendations expressed in this report are those of the Study Group members, and do not necessarily represent the official views, opinions, or policies of their institutions.*

## David K. Barton

David Barton received an A.B. in Physics from Harvard College in 1949. He began his career as an Engineering Aid for the U.S. Army Signal Corps at White Sands Proving Grounds in 1946. He served as Radar Engineer at White Sands from 1949 to 1953 and at Signal Corps Engineering Laboratories at Fort Monmouth, NJ until 1955.

In 1955, Mr. Barton joined the RCA Missile and Surface Radar Department in Moorestown, NJ as System Engineer. He was awarded the RCA David W. Sarnoff Award for Outstanding Achievement in Engineering in 1958. In 1963, Mr. Barton became a Consulting Scientist to Raytheon Company at their Equipment Division in Wayland, MA and later to their Missile Systems Division in Bedford. He has been Vice President for Engineering at ANRO Engineering Inc. since 1984.

Mr. Barton has served as member of the National Research Council's Air Force Studies Board, as Chair of the Committee on the E-3A Radar, and as Chair of the Committee on Advanced Airborne Surveillance Radar. He is a member of the National Academy of Engineering, a Fellow of IEEE, and received the IEEE Centennial Medal in 1984, and the Third Millennium Medal in 2000. He was named the IEEE Microwave Theory and Techniques Society Distinguished Microwave Lecturer in 1987-88.

His fields of research include radar systems, the propagation of radar waves, radar tracking and measurement, and radar guidance of missiles. He is the author of numerous publications.

## Roger W. Falcone

Roger Falcone earned his AB degree in Physics from Princeton University in 1974 and his PhD in Electrical Engineering from Stanford University in 1979. He was the Marvin Chodorow Fellow at Stanford until 1983, when he joined the faculty at the University of California, Berkeley Physics Department. He served as Chair of the Berkeley Physics Department from 1995-2000. Prof. Falcone serves on various advisory committees at Lawrence Livermore National Laboratories, Stanford Linear Accelerator Center, and other institutions, is a participating scientist at Lawrence Berkeley National laboratory, and is the co-author of over 100 publications in lasers, atomic physics, and condensed matter physics.

He is a Fellow of the American Physical Society and the Optical Society of America. Prof. Falcone received the Young Investigator Award of the National Science Foundation in 1984-89, was a Distinguished Traveling Lecturer of the APS Laser Science Topical Group (1992-93), and received the Halbach Prize for Instrumentation at the Advanced Light Source, LBNL in 2000.

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## Daniel Kleppner (Co-Chair)

Daniel Kleppner received the PhD degree in experimental atomic physics from Harvard University in 1960. He joined the faculty of the Massachusetts Institute of Technology in 1966, where he now holds the Lester Wolfe endowed chair in physics and is Director of the MIT-Harvard Center for Ultracold Atoms.

Dr. Kleppner's research is in experimental atomic physics, including high precision measurements, quantum optics, and the Bose-Einstein condensation of atoms. He is the co-inventor of the hydrogen maser atomic clock. He has served as chair of the Division of Atomic, Molecular and Optical Physics of the American Physical Society, and on numerous committees of the National Academy of Sciences, the National Research Council, the American Physical Society and the American Institute of Physics. He chaired the Physics Policy Committee of the American Physical Society from 1992-1996.

Dr. Kleppner is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, and a Foreign Associate of the Academy of Science, Paris. Dr. Kleppner's awards include the Davison-Germer Prize and the Lilienfeld Prize of the American Physical Society, the William F. Meggers Award of the Optical Society of America, the Oersted Medal of the American Association of Physics Teachers, and the James Rhyn Killian Faculty Achievement Award of the Massachusetts Institute of Technology. He is the co-author of two textbooks.

## Frederick K. Lamb (Co-Chair)

Frederick Lamb earned a DPhil in Theoretical Physics from Oxford University in 1970. He became Professor of Physics at the University of Illinois in 1978 and Professor of Astronomy in 1980. He now holds the Brand and Monica Fortner Endowed Chair in Theoretical Astrophysics and is Director of the Center for Theoretical Astrophysics at Illinois.

Dr. Lamb's astrophysics research has focused on problems in high-energy and relativistic astrophysics, including neutron stars, pulsars, X-ray stars, and black holes; plasmas and radiation transport; nuclear processes; gas and magnetofluid dynamics; and the effects of strong gravitational fields. He has served as Chair of the High Energy Astrophysics Division of the American Astronomical Society and on numerous NASA panels and a variety of National Academy of Science working groups and committees concerned with astrophysics and space policy. He played a leadership role in the conception, development, and success of NASA's Rossi X-Ray Timing Explorer mission and is currently Chair of the scientific panel advising NASA on the mission.

Dr. Lamb has served as consultant to the Department of Defense, the Department of Energy, the Arms Control and Disarmament Agency, and the U.S. Congress on defense, security, and space policy issues. His activities have included advising the Arms Control and Disarmament Agency on verification of the Threshold Test Ban and Peaceful Nuclear Explosions Treaties, providing guidance to the DoD program responsible for monitoring underground nuclear explosions, participating in a review of the Advanced Simulation Technology Center for the Institute for

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Defense Analyses, and serving as a member of the Panel on Space and Aerospace Vehicles at the DDR&E/IDA Workshop on Advanced Technologies and Future Joint War Fighting.

Dr. Lamb is the recipient of many honors and awards. He was awarded a John Simon Guggenheim Foundation Fellowship, a Danish Research Academy Visiting Professorship at Copenhagen University, and a Carnegie Foundation Science Fellowship at Stanford University, to name a few. He spent last year as a Visiting Professor of Physics at MIT and a Visiting Scientist at Harvard University.

Dr. Lamb is a Fellow of the American Physical Society and the Royal Astronomical Society (London).

### Ming K. Lau

Ming K. Lau received his PhD in electrical engineering from Stanford University in 1993 under Sandia National Lab's doctoral fellowship. Since 1982 he has been a member of the technical staff at Sandia where he helped develop high-altitude terrain-aided navigation algorithms using synthetic aperture radar measurements, carried out covariance analyses of in-flight alignment and calibration of inertial navigation systems, designed the AFTI/F16 (aircraft) terrain-aided navigation system, designed Sandia Inertial Terrain-Aided Navigation (SITAN) algorithms for attack aircrafts using radar altimeter measurements, and analyzed their performance on Army supplied helicopter flight data.

In 1993, Dr Lau became a Senior Member of the Technical Staff at Sandia. He analyzed the performance of the arming and fusing system in the W88/Wk5 (Trident II system), modeled the dynamics of a three-axis gimbal system, designed the motion compensation algorithm for a synthetic aperture radar, and designed a missile guidance algorithm using GPS measurements for a moving-mass control system.

Since 1997, Dr Lau has been the manager of the Control Subsystems Department at Sandia. He oversees projects on precision motion measurements, precision motion controls, precision guidance, modeling of electro-mechanical systems for control applications and performance analyses, design integration of electronic hardware, and work related to the arming and fusing subsystem for the W76 (a nuclear weapon system). In addition, he is also in charge of the computer network for the Electronic Systems Center with about 180 users.

### Harvey L. Lynch

Harvey Lynch received his PhD in Physics from Stanford University in 1966, specializing in particle physics. After serving as an NSF Fellow at CERN in Geneva Switzerland for two years, he joined the Stanford Linear Accelerator Center (SLAC) and worked on first fixed target experiments and then the construction and use of the magnetic detector for the SPEAR  $e^+ e^-$  storage ring. He served as co-spokesman for that experiment from 1974 through 1976.

In 1976, Dr Lynch joined the laboratory DESY in Hamburg Germany and continued  $e^+ e^-$  colliding beam experiments with experiments with the DASP and TASSO experiments. He was

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part of the central design team for the TASSO detector and the experimentation with that device through 1980.

After serving as a visiting Professor at UC Santa Barbara, Dr Lynch returned to the Stanford Linear Accelerator in 1982, where he continued experimental work with  $e^+ e^-$  colliding beam experiments as well as the design of the new colliding beam facility SLC as well as the design and construction of the large detector SLD.

He took a leave of absence from SLAC in 1986 to prepare a report on the "Technical Evaluation of Offensive Uses of SDI" for the Stanford Center for International Security and Arms Control (CISAC). This work explored issues of high power lasers propagating in the atmosphere. He participated in the CISAC workshop on control of SLCMs and with the NRDC, and was a member of the US team working in association with the Soviet Academy of Sciences making measurements of nuclear weapons' emissions aboard Soviet Cruiser SLAVA as part of a SLCM verification study.

From 1991 to 1994 he served as the Deputy for Detector Technical Liaison to the Associate Director of Research at the Superconducting Super Collider in Texas. Returning to SLAC in 1994 he became the integration physicist for the design and construction of the BaBar detector for the new  $e^+ e^-$  colliding beam facility.

### David E. Moncton

David Moncton earned a PhD in Physics from Massachusetts Institute of Technology in 1975. Before joining Argonne in 1987, Dr Moncton was a Senior Research Associate at the Exxon Research and Engineering Company. Previously he was an experimentalist and group leader at the Brookhaven National Laboratory and a member of the technical staff at Bell Laboratories. He currently serves as Associate Laboratory Director at Argonne, responsible for the Advanced Photon Source. He headed the design, construction and currently the operation of the national user facility, which produces the nation's most brilliant x-ray beams for materials research, condensed matter physics, chemistry, and biological, pharmaceutical, and medical research.

From 1999 to 2001, Moncton was the Executive Director for the Spallation Neutron Source at Oak Ridge National Laboratory, a position he held concurrently with his Argonne responsibilities. When completed in 2006, the SNS will be the world's most intense source of neutron beams for research.

Dr Moncton's research interests lie in two primary categories: x-ray scattering studies of phase transitions, and long-range order and novel states of matter, together with the development of new techniques for using synchrotron radiation; and neutron scattering studies of structural phase transitions, lattice dynamics, and magnetic ordering transitions.

He received the DOE Ernest Orlando Lawrence Memorial Award in 1987, and his work on "Synchrotron X-ray Studies of the Magnetic Structure of Holmium" was named the Outstanding Scientific Accomplishment in Solid State Physics in the DOE Materials Research Competition.

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He is a fellow of the American Physical Society and a member of the American Association for the Advancement of Science.

### L. David Montague

L. David Montague received his Bachelor of Mechanical Engineering from Cornell University in 1956. He has more than 40 years of experience in design, development and program management of military weapon systems, with emphasis on submarine launched weaponry, and ballistic missile defense systems. In addition to his development expertise in both tactical and strategic strike and defense systems, his experience has also focused on the requirements, development, and policy issues of strategic forces and defense systems to protect against weapons of mass destruction.

Mr. Montague, now an independent consultant, is a retired President of the Missile Systems Division at Lockheed Martin Missiles and Space. He is a member of the National Academy of Engineering, a fellow of the American Institute of Aeronautics and Astronautics, and has served on numerous government advisory groups and studies, including the Navy Strategic Systems Steering Task Group, Naval Studies Board committees, and task forces for both the U.S. Army and the Defense Science Board.

### David E. Mosher (Staff Director)

David Mosher is a Nuclear Policy Analyst at RAND. He has been at RAND since the spring of 2000, where his focus has been on strategic warfare, nuclear weapons, and missile defenses.

Before joining RAND, he spent ten years in the National Security Division at the Congressional Budget Office analyzing nuclear, missile defense, and arms control policy and budget issues. He has written papers, studies, and articles on a wide variety of issues including nuclear weapons and forces, ballistic missile defenses, arms control, reducing nuclear threats from Russia, and general defense budget issues.

Before joining CBO, he worked at the Johns Hopkins University's Applied Physics Laboratory where he conducted research on ocean physics and remote sensing.

### William C. Priedhorsky

William Priedhorsky received his PhD in Physics, specializing in x-ray astronomy, from the California Institute of Technology in 1978. He has been on the staff of Los Alamos National Laboratory since 1978 and was named Laboratory Fellow in 1997.

At Los Alamos, Dr Priedhorsky developed x-ray diagnostics for laser fusion research and discovered copious hard x-rays from CO<sub>2</sub> laser-plasma interaction. In 1981, he joined the Space Astronomy and Astrophysics group and began research into long-term variability on x-ray sources using Vela 5B satellite data taken 1969-1979, as well as developing instrumentation for

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nuclear burst detection and other national security missions including the detection of nuclear materials in space.

Dr Priedhorsky conceived and led the development of ALEXIS small satellite mission from 1988 to 1993. ALEXIS was one of the first small satellites to carry sophisticated science instruments, which set a new standard for the performance in a small satellite in its data volume, payload fraction and efficiency of ground operation.

From 1995-1999, he was Lead Project Leader for Proliferation Detection Technology, responsible for a set of projects in active and passive remote sensing, and also responsible for the Laboratory's efforts in Hard and Deeply Buried Target Defeat.

Since 1999 he has been the Chief Scientist in the Nonproliferation and International Security Division responsible for the health of basic and applied research in the areas of space science, proliferation detection, treaty monitoring, nuclear safeguards, and international technologies.

### Maury Tigner

Maury Tigner received his PhD in Physics and Engineering from Cornell University in 1964. He is the current Director of the Laboratory of Nuclear Studies at Cornell University and previously served as Senior Advisor to the Chinese Academy of Sciences. He has served on numerous committees including as chair of the Muon Collider Technical Advisory Committee, FNAL, BNL, LBL; the HEPAP Sub panel on Future High Energy Physics, DOE; and as chair of the Steering Committee, Accelerator Test Facility, BNL.

Dr Tigner is the recipient of numerous awards such as the Wilson Prize from the APS in 2000, the E.O. Lawrence Memorial Prize, DOE; and the Distinguished Associate Award from DOE. He is a member of the National Academy of Science, a fellow of the American Physical Society, the American Association for the Advancement of Science, the American Academy of Arts and Sciences, and H.A. Bethe chair of Physics at Cornell University.

### David R. Vaughan

David Vaughan received his PhD in Mechanical Engineering from Massachusetts Institute of Technology in 1962. Upon graduation he joined McDonnell Douglas Aerospace Corporation, and as Chief of the Guidance Technology Branch, supervised guidance work for the modified Spartan interceptor.

Since 1986, Dr Vaughan has been employed as Senior Engineer in the Technology and Applied Science Department of the RAND Corporation. In this role, he is currently performing research on Evaluating the Mix of Onboard and Offboard ISR Assets. Recently he was the leader of a project on Theater Missile Defense/Critical Mobile Targets (for UASF/Air Combat Command) which performed operational and technical analyses of airborne boost- and ascent- phase intercept, and air-to-surface attack operations including sensor and data processing, BM/C3I, weapons and sensor platforms, weapons and force level analysis.

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Dr Vaughan previously served as Deputy Division Head, Strategic Division of R& D Associates. He was responsible for the review of all programs, including work relating to U.S. and Soviet offense and defense systems. His experience includes work on surface to air interceptor missile performance limits; submarine launched ballistic missile performance limits; radar tracking and prediction analyses with particular emphasis on modeling bias errors.

He is an Associate Fellow of AIAA.