The APL Colloquium

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The APL Colloquium has been a 59-year tradition at the Laboratory. The lectures are held weekly, generally from October to May, and cover an eclectic range of topics. The early history of the APL Colloquium, covering its first four decades through 1988, has been previously described in the Technical Digest. The present article highlights some of the history of the institution and provides a chronological inventory of the colloquium lectures from 1988 to 2006.

INTRODUCTION

A colloquium is a meeting for the exchange of views covering a broad range of topics, usually led by a different lecturer on a different topic at each meeting, and followed by questions and answers. A colloquium series is aimed at a diverse audience and differs from a seminar series, which tends to be geared to specialists in the field and is consequently more restrictive and esoteric with respect to the topics covered. Given this distinction between colloquium and seminar, the APL Colloquium is certainly rightly named, covering an eclectic range of topics intended to appeal to the APL staff in general.

The APL Colloquium, begun in 1947, is held weekly, generally on Friday afternoons from October to May, and is one of the longest standing technical and scientific lecture series in the Washington/Baltimore area. The goal of the colloquium has been to bring to the Laboratory scientific scholars, technical innovators, industry leaders, government sponsors, military personnel, policy makers, authors, journalists, commentators, and photographers to inform, educate, and enlighten Laboratory staff on what is currently exciting, relevant, and of value to the work and people of APL.

The colloquium schedule has been chronicled in previous Technical Digest articles, beginning with the first issue in 1961 of the precursor APL Technical Digest. This tradition has continued to the present in the Digest, where the “Miscellanea” section regularly contains a list of recent colloquia (the Laboratory has traditionally used the Latin plural, colloquia, rather than the English form, colloquiums). The early history and first four decades of the colloquium through 1988 have been described in another previous issue of the Digest in an article by Ernest Gray and Albert Stone.

Although information regarding the earliest days was fragmentary (there were no surviving records from that period), Gray and Stone managed to provide the flavor of the colloquium series and some specification of memorable speakers, some of whom were or later became Nobel Laureates. Speakers through the 1950s included Jesse Beams, Robert H. Dicke, C. Stark...
Draper, Scott Forbush, Buckminster Fuller, George Gamow, Peter Goldmark, Donald R. Griffin, Marc Kac, Herman Kahn, Polykarp Kusch (later awarded the Nobel Prize), Otto Neugebauer, Franco Rasetti, then Captain Hyman Rickover, Richard B. Roberts, Arnold Siegert, S. Fred Singer, John C. Slater, Nobel Laureate Harold C. Urey, John A. Wheeler, Nobelist Eugene Wigner, and Nobelist Chen N. Yang.


The present article provides a few brief highlights of the history of the APL Colloquium and documents activities from 1988 to 2006.

HIGHLIGHTS OF APL COLLOQUIUM HISTORY

The founder of the APL Colloquium was Robert Herman (now deceased), whose initial conception in 1947 was a scientific research lecture series intended for the APL Research Center staff, but the colloquium quickly broadened in scope to include the entire APL community. The early lecture series was held late on Friday afternoons at the Laboratory’s 8621 Georgia Avenue facility in Silver Spring. Robert Herman was in charge of the colloquium from 1947 to 1955, when he left the Laboratory.

Albert Stone took over and ran the colloquium from 1955 to 1961. At the start of this period, the William S. Parsons Auditorium in the then-new Howard County facility was phased in as the venue for the colloquium, with the first one held there on 21 October 1955. Parsons Auditorium greatly expanded the colloquium accessibility with its capacity of 200 participants. The tradition of having a colloquium luncheon for the speaker and attended by a small number of APL staff was also established. In 1961, Stone handed over the responsibility of running the colloquium to Ernest Gray.

Gray held the reins from 1961 until he retired in 1994. During this 33-year period, between 25 and 30 colloquia per year—around 900 colloquium lectures—were conducted under Gray’s command. One of the innovations during this period started in November 1961, when all colloquia were audiotaped and then, by 1962, videotaped. Video permitted the lectures to be transmitted on closed circuit to remote TV monitors in the Howard County cafeteria whenever the audience exceeded the capacity of Parsons Auditorium. Copies of the videotapes in VHS format were deposited in APL’s R. E. Gibson Library so that staff members who had to miss a lecture could catch up later. In 1969, a weekly Colloquium Information Sheet and a monthly colloquium schedule were distributed to the APL staff. The Colloquium Information Sheet provided a half-page biography of the speaker and a half-page synopsis of the talk. The Kossiakoff Center opened in 1983, allowing some colloquia to be held in the much larger 500-seat auditorium. Also in 1983, live broadcast of the colloquium lecture to Homewood via a microwave link to TV monitors in Maryland Hall was instituted, but eventually abandoned in 2004.
Kishin Moorjani became the next colloquium leader in 1994. A colloquium website, www.jhuapl.edu/colloquium, was established in 1995, providing the schedule of talks and an archive of previous talks. Starting in 1999, the website included an author biography and topic synopsis for each colloquium. In late 2001, the Colloquium Information Sheet and the monthly colloquium schedule transitioned from paper sent to the staff to an electronic version e-mailed to staff. However, the recipients on the external mailing list continued to receive paper announcements. Moorjani was in charge of the colloquium from 1994 until his retirement in 2002, whenupon I was given the task of running the colloquium.

In 2003, a colloquium feedback page was added to the colloquium website to provide a mechanism for comments, suggestions, and evaluations of the lectures. Also that year, the distribution of the Colloquium Information Sheet and schedule transitioned to a fully electronic mailing, with the commencement of e-mail to external recipients. Another development in 2003 was the move to record the colloquium lectures on DVD-R, in addition to VHS, for deposit in the Gibson Library, where they are available for viewing or borrowing.

SPECIAL COLLOQUIA

During the year, there are several special colloquia. One of them is the Archie I. Mahan Colloquium, held annually since its inauguration in December 1991. Under the provisions of his will, former APL staff member Dr. Mahan bequeathed a sum of money to APL to establish a special memorial fund in his name, to invest the money and to use the earnings from his bequest “to establish and maintain an annual Christmas lecture on scientific subjects.” The Laboratory has honored this request by designating a colloquium lecture close to Christmastime to be the Archie I. Mahan Colloquium. The rostrum of speakers has been as follows: Isaac N. Bankman, Robert F. Behler, Marc H. Brodsky, Dennis M. Bushnell, Sayeed Choudhury, Bruce A. Dale, Donald Duncan, James D. Franson, Stuart Gilman, R. G. Greenler, David J. Nagel, Thomas A. Potemra, J. W. Wagner, E. Wolf, and Neil Zimmerman.

Dr. Mahan was a member of the APL staff in 1955 until he retired in 1979. He held an A.B. in physics and mathematics (1931) from Friends University in Wichita, Kansas, and a Ph.D. in physics (1940) from The Johns Hopkins University. At APL, his research focus was physical and geometric optics and lasers, while outside the Laboratory he was particularly active in the Optical Society of America as well as the Washington Philosophical Society and the American Institute of Physics.

On 7 October 1994, the annual Ernest P. Gray Colloquium was inaugurated to honor Ernie’s 33 years of running the colloquium. The first of these was given by Gray himself on “Reminiscence of My Association with APL Colloquia.” Typically, the Ernest P. Gray Colloquium is held early in the colloquium year and is presented by an APL staff member. The list of speakers in this series follows: Frederick S. Billig, Wayne A. Bryden, Denis J. Donohue, James Franson, Robert Fry, Tom Krimigis, Donald G. Mitchell, John Sommerer, James C. Spall, Joseph J. Suter, and Paul J. Waltrip.

With the beginning of the 21st century, eight colloquia were held and designated “Millennial Challenges: Colloquia 2000.” The speakers in this series shared their expectations and speculations for the new century in the areas of national security, space science and technology, and education. The list of speakers in this series was as follows: William R. Brody, Frank L. Fernandez, Daniel S. Goldin, Shirley Ann Jackson, then Rear Admiral Michael G. Mullen, then Admiral Rodney P. Rempt, Richard T. Roca, Robert Skinner Jr., and Virginia Trimble. An issue of the Technical Digest documents these lectures.

Following 9/11, 15 colloquia were held through the 2001–2003 period labeled “The New Critical Challenge: The War on Terrorism.” These colloquia dealt with aspects of the terrorist threat, bioterrorism, counterterrorism, defense policies, legal issues, military responses, and intelligence concerns. The list of speakers was as follows: Stephen Biddle, Marius Deeb, Richard D. Fisher Jr., Vicki Freimuth, Sheldon Greenberg, Richard Haver, Bruce Hoffman, James F. Jarboe, Edward MacKerrow, Bradley Roberts, S. Frederick Starr, Peter F. Verga, Michael Vlahos, Ruth Wedgwood, and R. James Woolsey.

Two additional special colloquia are held each year to focus on the diversity of talent in two communities. A Black History Month Colloquium each February since 2001 has hosted Ellis Barksdale, Ronald Demon, Anthony D. King, Calvin Mackie, John Slaughter, and Woodrow Whitlow. A Hispanic Awareness Month Colloquium, held during the mid-September to mid-October period, was initiated in 2004 and hosted Orlando Figueroa. The U.S. Surgeon General, Vice Admiral Richard Carmona, MD, MPH, was the speaker for the 2005 event.

COLLOQUIUM CHRONOLOGY:
1988–2006

The following are groupings of colloquia for the approximately October to May colloquium season, alphabetized within each time frame. The speaker’s name and affiliation and the title of the talk are provided. Again, more information for some of the later talks (after 1999) can be found at the colloquium website, www.jhuapl.edu/colloquium, which contains a brief biography of the speaker and a synopsis of the talk. The current colloquium schedule is also available at that website.

1988–1989

John N. Bahcall (Institute for Advanced Study), Solar Neutrinos
Harry K. Charles Jr. (APL), Electronic Packaging

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Rafael De La Llave (Princeton University), Computer-Assisted Proofs in Mathematical Physics

Alexander J. Dessler (Rice University), Status of the Small-Comet Hypothesis

Farouk El-Baz (Boston University), In Search of Pharaoh's Boat

David Emin (Sandia National Laboratories), Large Bipolarons and High-Temperature Superconductivity

Raul Fainchtein (APL), Scanning Tunneling Microscopy and Spectroscopy at APL

Paul D. Garnett (SYSCON Corp.), Computer Viruses

John A. Goodman (University of Maryland), The AnomalousMuon Content of Air Showers from Hurricanes X-1

Henry F. Gray (Naval Research Laboratory), Field-Emitter Arrays: A Basis for Vacuum Microelectronics

Celso Grebogi (University of Maryland), Chaos and Fractals in Nonlinear Dynamics

O. W. Greenberg (University of Maryland), How Well Is the Pauli Exclusion Principle Obeyed?

James J. Griffin (University of Maryland), The Quadrumion-Rosetta Stone for the Electron-Positron Puzzle

Steven H. Hanke (JHU), Privatization: Public Versus Private Costs

Alexander E. Kaplan (JHU), Nonlinear and Quantum Optics of a Single Electron

Julian H. Krolik (JHU), Problems in the Formation of the Cosmic Microwave Background

Paul D. Lett (National Institute of Standards and Technology), Laser Cooling of Atoms to Microkelvin Temperatures

M. Masuda (Research Association of Superconducting Magnetic Storage, Japan), Recent Topics on Energy Storage Using Superconductivity

Paul S. Miller (JHU), Potential Therapeutic Applications for Anti-Sense Nucleic Acid Analog

Kishin Moorjani (APL), Superconducting Technology: A Look at Japan

Roger A. Morse (Cornell University), The Africanized Honeybee

Richard S. Muller (University of California, Berkeley), New Opportunities with Microdynamic Systems

Eugene N. Parker (University of Chicago), Do We Really Understand Our Nearest Star, the Sun?

Per-Anders Persson (New Mexico Institute of Mining and Technology), New Developments in Explosives Technology

David Savitz (University of North Carolina), Childhood Cancer and Exposure to 60-Hz Magnetic Fields from Power Lines

John Sheffield (Oak Ridge National Laboratory), Fusion Energy

Abner Shimony (Boston University), Hidden Variables and Bell's Theorem: Theory and Experiment

A. W. Sleight (DuPont and University of California, Santa Barbara), The Chemist's View of High Temperature Superconductivity

Thomas H. Stix (Princeton University), Atmospheric Processing

F. Whittle (ret.), ISOABE Award Address: The Invention and Development of the Gas Turbine Engine

Robert C. Dynes (AT&T Bell Laboratories), Vortex States in Superconductors: Microscopics and Macroscopics

A. R. Eastham (Queens University, Canada), Magnetically Levitated Trains

Martin O. Harwit (National Air and Space Museum), Astronomical Discovery and Astrophysical Understanding

Roderick V. Jensen (Yale University), Chaos in Classical and Quantum Systems: From Atoms to Asteroids

Donald J. Kessler (NASA Johnson Space Center), Orbital Debris: Implications for Spacecraft Operations

Daniel J. Kleitman (Massachusetts Institute of Technology), Computational Complexity and Economics

A. Refik Kortan (AT&T Bell Laboratories), Scanning Tunneling Microscope Observations of Nonperiodic Crystals

Henry A. Kues (APL), Effects of RF Radiation on the Primate Eye

Barbara G. Levi (Physics Today), Land-Based Missiles: The Basis for Decision

Thomas S. Mang (Roswell Park Memorial Institute), Clinical Treatment of Various Cancer Types by Means of Photodynamic Therapy

Reinhold Mann (Oak Ridge National Laboratory), Mobile Robotics for Nuclear Energy—Related Applications

Paul H. Nitz (JHU School of Advanced International Studies), From Hiroshima to Glasnost: Reflections on Four Perilous Decades

P. L. Olson (JHU), The Structure of Convection in the Earth's Mantle

Allan Robinson (Harvard University), Progress in Geophysical Fluid Dynamics

Michael W. Roth (APL), Neural Networks, Machine Vision, and Automatic Target Recognition

Richard Samuels (Massachusetts Institute of Technology), Getting America Ready for Japanese Science and Technology

Edward C. Stone (California Institute of Technology), The Voyager Encounter with Neptune

Darrel F. Strobel (JHU), The Atmospheres of the Outer Planets and Their Satellites

Alexander Szalay (JHU), Correlations of Galaxies on a Cosmic Scale

Theodore B. Taylor (Independent Consultant), Nuclear Disarmament: How Far Shall We Go?

Zlotko Tesanovic (JHU), Superconductivity in a Very High Magnetic Field

Joseph J. Tribbia (National Center for Atmospheric Research), Modern Weather Prediction

Samuel A. Werner (University of Missouri, Columbia), The Aharonov-Bohm Effect with Neutrons

Alfred Y. Wong (University of California, Los Angeles), Active Global Experiments for Preserving the Ozone Layer

Joseph Zys (Centre National d'Études des Télécommunications), Symmetry, Chemistry, and Optics: Approach to Molecular Engineering in Nonlinear Optics

1989–1990

John R. Apel (APL), Internal Waves in a Norwegian Fjord: “Dead Water” Revisited

Bruno W. Augenstein (The Rand Corp.), Antiproton Science and Technology

K. K. Bajaj (Arizona State University), Quantum Well Optoelectronics

Bruce A. Barnett (JHU), New Results from the Stanford Linear Collider Z° Experiment: A Limit on the Number of Neutrino Types

Nancy W. Boggess (NASA Goddard Space Flight Center), The Initial Cosmic Background Explorer (COBE) Results

S. Denardi (University of Massachusetts), Indoor Air Quality

Walter J. Doherty (IBM Watson Research Laboratories), Computing Directions for the 1990s

Ronald M. Atlas (University of Louisville), Bioremediation of Oil Spills

Eliot A. Cohen (JHU School of Advanced International Studies), American Strategy After Desert Storm

Robert Constanza (University of Maryland Chesapeake Biological Laboratory), Ecological Economics

Samuel T. Durrance and Arthur F. Davidsen (JHU Center for Astrophysical Sciences), The Hopkins Ultraviolet Telescope: An Odyssey in Space and Time

T. Fischell (Stanford University), Advances in the Treatment and Understanding of Coronary Artery Disease

M. H. Goldstein (JHU), Speech Processing by Real and Silicon Ears

1990–1991
Ronald E. Gots (National Medical Advisory Service), Toxins and Health: Science vs. Perception
Wayne M. Itano (National Institute of Standards and Technology), The Quantum Zeno Effect
Dwight L. Jaggard (University of Pennsylvania), Fractal Electrodynamics
Mark Kastner (Massachusetts Institute of Technology), The Single Electron Transistor
Gerald M. Masson (JHU), Software Fault Tolerance Using Certification Trails
Guy M. McKhann (JHU), Approaches to the Neurobiology of Language
P. G. Nelson (National Institutes of Health), Electrical Activity and Development of the Nervous System
Donald L. Price (JHU), The Neurobiology of Alzheimer’s Disease and Animal Models: Mechanisms of Disease and Prospects for Therapy
Michael Prise (AT&T Bell Laboratories), Optical Computation Using SEEDs (Self-Electro-optic Effect Devices)
Mark A. Reed (Yale University), Quantum Semiconductor Nanostructures: Physics and Applications
Raymond G. Roble (National Center for Atmospheric Research), Modeling the General Circulation of the Thermosphere/ Ionosphere and Its Response to Solar Variability
Edmond C. Roelof (APL), Global Imaging of Planetary Magnetospheres
Roald Z. Sagdeev (University of Maryland), Crisis of the Soviet Space Science Program
Thomas Schelling (University of Maryland), Meeting the Greenhouse Challenge
Bassam Z. Shakhashiri (University of Wisconsin), Communicating Science
Richard E. Smalley (Nobelist, Rice University), C₆₀: Chapter Two
Horst L. Stormer (AT&T Bell Laboratories), Optics with Two-Dimensional Electrons
Katherine J. Strangburg (Northwestern University and Argonne National Laboratory), Phase Transitions in Limited Connectivity Neural Networks
Kevin E. Trenberth (National Center for Atmospheric Research), Global Warming and Recent Climate Change: Observation and Modeling
Edwin L. Turner (Princeton University), Gravitational Lensing and Cosmology
Ralph R. Weinshelbaum (University of Chicago), Molecular Mechanisms for Radiation Metabolism in Tumor Cells
Carl E. Wieman (JILA/University of Colorado), Developments in Laser Trapping and Cooling
J. R. Williams (JHU), Treatment of Cancer with Radiolabeled Antibodies
James A. Yorke (University of Maryland), Chaos and Fractals in the Forced Damped Pendulum

1991–1992

J. R. Austin, Christina Myles-Tochko, Mark A. Baker, Jeffrey L. Hanson, and R. J. Taylor (APL), The Ocean Environment: Introduction; Global Ocean Characteristics; Internal Ocean Dynamics; Sound in the Ocean; Remote Sensing of the Ocean
Chris J. Burrows (JHU Space Telescope Science Institute), Fixing the Hubble Space Telescope
Praveen Chaudhari (IBM Research Laboratories), Critical Current, Grain Boundaries, and SQUIDs in the High Temperature Superconductors
Gerald Cook (George Mason University), Two Topics in Robotics: Kinematic Redundancy and Uncertain Environments
John Dassoulas, George C. Weiffenbach, William H. Guier, Alexander Kossiakoff, Carl O. Bostrom, Vincent L. Pisacane, and Stamatis M. Krimigis (APL), 35 Years of Space Science at APL
Alexander J. Dessler (Rice University), The Dirigible and the Space Shuttle: An Historic Analogy
Quentin E. Dolecek (APL), Scientific Visualization with Personal Computers
C. W. Francis Everitt (Stanford University), Testing of Einstein in Space: A Marriage of Physics and Technology
Feredyoon F. Family (Emory University), Dynamics of Fractal Surfaces
Murray Feshbach (Georgetown University), Health and Environmental Crises in the Former Soviet Union
Albert A. Galeev (Institute for Space Research, Russia), Space Research in the Former Soviet Union
Vitaly L. Ginzburg (Russian Academy of Sciences Lebedev Physical Institute), High Temperature Superconductivity
Steven H. Hanke (JHU), Transforming the Russian Economy
James W. Head III (Brown University), Venus Volcanism: Recent Results from Magellan
Arthur F. Hebard (AT&T Bell Laboratories), C₆₀ from Soot to Superconductivity
Robert E. Kanigel (JHU), Ramanujan: The Man Who Knew Infinity
Alan J. Krupnick (Resources for the Future), The Cost and Benefits of Smog Control
Stephen P. Maran (NASA Goddard Space Flight Center), What the Hubble Telescope Is Telling Us
P. Meakin (DuPont Co.), Droplet Coalescence: Physics Application and Aesthetics
Leslie Misrock (Pennie and Edmonds), Planning for and Surviving the Patent Wars of the 1990’s
T. Mitchell (North Carolina State University), A Fault-Tolerance Super Network of the U.S. Air Force’s Major Operational Commands
Steven Muller (Twenty-First Century Foundation), Technology and Society in the 21st Century
Walter H. Munk (Scripps Institution of Oceanography), Global Acoustics
Jagdish Narayan (National Science Foundation and North Carolina State University), Emerging Areas in Materials Research
D. M. Pardon (JHU), Molecular Engineering of the Anti-Tumor Immune Response
Andrea Prosperetti (JHU), The Sound of Bubbles
Calvin F. Quate (Stanford University), Imaging and Surface Modification with Scanning Probes: The Tunneling and Force Microscopes
Peter C. Searson (JHU), Light-Emitting Porous Silicon Structures
Leonard Shlain (Author), Art and Physics: Parallel Visions in Space, Time, and Light
S. Fred Singer (University of Virginia), Are Human Activities Affecting the Climate?
John C. Sommerer (APL), Confronting Chaos Theory with Experiments
G. R. Uhl (JHU and National Institute for Drug Abuse), Structure of the Dopamine Transporter: Receptor for Cocaine and Parkinson’s Disease Neurotoxins
George W. Wetherhill (Carnegie Institution of Washington), The Formation of the Solar System
Emil Wolf (University of Rochester), The Redshift Controversy and Correlation-Induced Changes in Spectra
Eric D. Young (JHU), Information Processing in the Auditory System

1992–1993

R. K. Adair (Yale University), The Physics of Baseball
J. V. Badding (Pennsylvania State University), High-Pressure Chemistry of Hydrogen in Metals
Joseph Weber (University of Maryland, College Park), New Approaches to Neutrino Detection
David B. Weishampel (JHU), Under Our Feet: Dinosaurs of the East Coast

1994–1995

Charles Bolden (Colonel, U.S. Naval Academy), The Importance of Space Exploration by Humans
Andrew F. Cheng (APL), Near Earth Asteroid Rendezvous: APL’s First Planetary Mission
Leon Cohen (Hunter College), Time-Frequency-Scale Description of Signals
Sankar Das-Sarma (University of Maryland), Self-Organized Critical Phenomena: Non-Equilibrium Growth
David DeVorkin (National Air and Space Museum), APL’s Participation in the V-2 Era
E. Donald Elliott (Fried, Frank, Harris, Shriver, and Jacobson), Rethinking the Role of Science in Risk Evaluation
Adam Falk (JHU Department of Physics and Astronomy), The Beautiful Bottom Quark
Holland C. Ford (JHU), Searching for Black Holes
Ernest P. Gray (APL, ret.), Reminiscence of My Association with APL Colloquia
V. Daniel Hunt (Technology Research Corp.), Quality Management: State of the Practice
James S. Langer (University of California, Santa Barbara), Dynamics of Earthquakes and Fracture
Charles M. Lieber (Harvard University Department of Chemistry), High-Temperature Superconductors: Probing the Magnetic Flux Lines
Ho J. Paik (University of Maryland, College Park), Superconducting Gravity Gradiometers: Design and Applications
Charles S. Peskin (New York University Courant Institute of Mathematical Sciences), Muscle and Blood: A Computer Model of the Heart
Mark Robbins (JHU Department of Physics and Astronomy), Molecular Mechanisms for Friction
Steven L. Rolston (National Institute of Standards and Technology), Laser-Cooled Atoms: The Coldest Thing Around
Azriel Rosenfeld (University of Maryland, College Park, Center for Automation Research), Perspectives on Computer Vision
Donald Saari (Northwestern University Department of Mathematics), Mathematical Complexity of Simple Economics
Erica Schoenenberger (JHU Department of Geography and Environmental Engineering), Corporate Transformations: Culture, Strategy, and Competitiveness
William N. Sharpe Jr. (JHU Department of Mechanical Engineering), Tensile Testing of Small Specimens
Mark J. T. Smith (Georgia Institute of Technology), Data Compression for Image and Video Signals
Barry A. Solomon (WR Grace and Co.), Membrane-Based Hybrid Artificial Organs
Michael F. Summers (University of Maryland, Baltimore County, Department of Chemistry), The Structure of HIV-1 Proteins by Nuclear Magnetic Resonance
James J. Valdes (U.S. Army Edgewood Research, Development, and Engineering Center), Destruction of the World’s Chemical Agent Stockpiles: Alternative Technologies and Political Issues
John Vac (National Institute of Standards and Technology), Internet Security
J. W. Wagner (JHU), Measuring Dimensions with Light
Fred C. Wellstood (University of Maryland, College Park), Magnetic Microscopes Using Superconducting Sensors
John Wozniak (APL), Advanced Natural Gas Vehicle Development
Maria T. Zuber (JHU), Shape and Internal Structure of the Moon from the Clementine Mission

1995–1996

L. Edward Antosiek (Captain, USS Abraham Lincoln), U.S. Navy Telemedicine
Dimitri T. Azar (JHU Wilmer Ophthalmological Institute), Refractive Surgery
Frederick S. Billig (APL), Missions Technology and Prospects for Hypersonic Flight
Samuel A. Bowring (Massachusetts Institute of Technology), The Earth’s Early Evolution
Ludwig Brand (JHU Department of Biology), Macromolecular Confirmations by Picosecond Spectroscopy
Rama Chellappa (University of Maryland, College Park), Context-Based Exploitation of Aerial Images
Joel A. Cohen (Rockefeller University), Population Growth and Earth’s Human Carrying Capacity
Robert J. Cotter (JHU Department of Pharmacology and Molecular Science), Smart Molecular Detectors for Biological Research
Tim V. Cranmer (National Federation of the Blind and The Braille Research Center), Pencils, Pictures, and Computers: Technologies for the Blind in Sight
Arthur F. Davidsen (JHU Department of Physics and Astronomy), Observations of Intergalactic Helium with the Hopkins Ultraviolet Telescope
Sylvester J. Gates Jr. (University of Maryland, College Park, Department of Physics), Superspace: Can You Really Get There from Here?
Donald A. Henderson (JHU School of Public Health and Hygiene), New and Emerging Infections
Maynard L. Hill (APL, ret.; Consultant on UAV), World Record Model Aeroplanes
Jan Hines (AT&T Microelectronics), Japanese Manufacturing Methodologies and Practices
Gerald L. Kulcinski (University of Wisconsin), Safe and Clean Energy from the Moon
Robert S. Langer Jr. (Massachusetts Institute of Technology), Polymeric Delivery Systems for Drug Delivery and Tissue Engineering
Richard S. Lindzen (Massachusetts Institute of Technology), Global Warming
Ralph L. McNutt (Massachusetts Institute of Technology), A New Perspective on the Solar Neutrino Problem
Stuart L. Pimm (University of Tennessee), The Future of Biodiversity
Gary H. Posner (JHU Department of Chemistry), Designer Drugs for Healthier Living
Thomas A. Potemra (APL), A Century of Polar Exploration
Daniel E. Prober (Yale University), Hot Electronic Physics and Detectors in Superconductors
Noah Rifkin (U.S. Department of Transportation), Advanced Technology Needs and Applications in Transportation
Barbara Ryden (Ohio State University), The Fate of the Universe
Joel M. Schnur (Naval Research Laboratory), Lipid Tubules: Formation, Characterization, and Applications
William S. Seegar (Naval Research Laboratory), Space Technology and Natural Resource Conservation
Michael Unser (National Institutes of Health), Fast Algorithms for Wavelet Transforms

1996–1997

Jeffrey D. Abramson (Brandeis University), Electronic Democracy: Implications of the New Technologies
David Bloom (Harvard University), Demographic Transitions and Economic Miracles
Gilbert B. Chapman II (Chrysler Corp.), Nondestructive Evaluation of Automotive Materials
Alan G. Robinson (University of Massachusetts), Corporate Creativity: World-Class Idea Systems
Steven L. Rolston (National Institute of Standards and Technology), Optical Lattices: A New Solid State?
Peter Schultz (Brown University), Killer Impacts: Effect of Impact Angle
Michael F. Shlesinger (Office of Naval Research), Protein/Receptor Matching
James A. Simmons (Brown University), Signal Processing for Target Imaging
Gregory W. Sullivan (University of Maryland), The Search for Neutrino Mass at Super-Kamiokande
Nitish Thakor (JHU Department of Biomedical Engineering), Neuroengineering
Forrest Tobe (JHU Peabody Institute), The 21st Century Musical Ensemble
Peter C. van Zijl (JHU School of Medicine), MRI Methods for Studying Brain Functions
Samuel L. Venneri (NASA), Intelligent Synthesis Environment
Ellen D. Williams (University of Maryland), Fluctuations in Materials Science
Robert L. Wolke (University of Pittsburgh), Kitchen Chemistry and Physics
Donald K. Yeomans (Jet Propulsion Laboratory), The Impact of Comets and Asteroids upon the Earth

1999–2000

Mario Acuña (NASA), The Mars Global Surveyor
John D. Anderson (National Air and Space Museum), Breaking the Sound Barrier
Isaac N. Bankman (APL), Laser Radar in Ballistic Missile Defense
William R. Brody (President, JHU), The Quantum Physics Model of the University in the New Millennium
Claude R. Canizares (Massachusetts Institute of Technology), First Results from the Chandra X-ray Observatory
Gregory Chaitin (IBM), A Century of Controversy over the Foundations of Mathematics
Ralph Chapman (Smithsonian Institution), The Virtual Triceratops: Creating the First Digital Dinosaur
Ronald Demon (VectraSense Technologies, Inc.), Footwear Technology on the Cutting Edge: Computerized Footwear
Robert A. Eisenstein (National Science Foundation), The Future of Physical Science: A View from Washington
Frank L. Fernandez (Director, Defense Advanced Research Projects Agency), DARPA in the 21st Century
Roy Frieden (University of Arizona), Physics from Fisher Information
C. Lee Giles (NEC Research Institute), Searching the Web: It Is Worse Than You Thought
Thomas H. Guderjan (St. Mary’s University), Blue Creek: An Ancient Maya City
James W. Head (Brown University), Water on Mars: Recent Results on Oceans and Polar Deposits
Russell Howard (Naval Research Laboratory), Space Weather
Shirley Ann Jackson (President, Rensselaer Polytechnic Institute), Science and Engineering Education of Women in the 21st Century
Douglas B. Lenat (Cycorp), The Cyc Project
James Mayfield (APL), Intelligent Web Searching
Frank E. McGarry (Computer Sciences Corp.), Attaining Level 5 in the Capability Maturity Model
Michael I. Miller (JHU Center for Imaging Science), Deformable Templates and Image Understanding
Marc G. Millis (NASA), Breakthrough Propulsion Physics Research Program

David E. Moncton (Argonne National Laboratory), Advanced Photon Source
John J. Quinn (University of Tennessee), The Fractional Quantum Hall Effect
Eberhardt Rechtin (University of Southern California, ret.), Systems Architecting of Organizations
Rodney P. Rempt and Michael G. Mullen (Rear Admirals, U.S. Navy), U.S. Navy in the 21st Century
Richard T. Roca (Director, APL), A Telecommunications Architecture for the 21st Century
Steven Saleberg (Institute for Genomic Research), Annotating Whole Genomes
Robert Skinner Jr. (Transportation Research Board), Transportation in the 21st Century
Joseph J. Suter (APL), Innovative Battery Technologies
Michael Zolensky (NASA Johnson Space Center), Extraterrestrial Water

2000–2001

Jim Allen (Sandia National Laboratories), Intelligent Micromachine Initiative and MEMS Fabrication Technologies
Athena Andreadis (University of Massachusetts Medical School), Human Settlement of Other Planets
Stephen G. Brush (University of Maryland, College Park), Why Was Relativity Accepted
Andrew Cheng (APL), NEAR at Eros
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Kenna Peusner (George Washington University Medical Center), A Promising Model to Investigate Brain Plasticity
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Marius Deeb (JHU School of Advanced International Studies), On Why Bin Laden!
Donald Duncan (APL), RDT&D in Navy Programs: Optics at ADSD
Walter Dyer (Ballistic Missile Defense Organization), Advanced Electro-Optic Technologies for Ballistic Missile Defense
Millard Firebaugh (General Dynamics Electric Boat Div.), Submarine Design and Construction
John Gearhart (JHU School of Medicine), Stem Cell Research
Richard Haver (Office of the Secretary of Defense), Technology and the Needs of the Intelligence Community
Bruce Hoffman (The Rand Corp.), Change and Continuity in Terrorism
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David Kestenbaum (National Public Radio), My Father Sees Muons in the Driveway or How to Explain Physics to Everybody Else
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Ellis Barksdale (Barksdale Solutions), E3 = Egypt, Engineering, and Education
Robert F. Behler (Major General, USAF, ret.; APL), Enforcing U.S. Foreign Policy from the Edge of Space
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Maynard Hill (APL, ret.), Trans-Atlantic Radio Controlled Model Flight
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Sunil Khilnani (JHU School of Advanced International Studies), South Asia on the Edge
Phillip Longman (New America Foundation), The Geo-Politics of Global Aging: Fertility Decline and the Fate of Nations
Wayne Merry (American Foreign Policy Council), The Future of Trans-Atlantic Relations: Thinking Beyond NATO
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Robert H. Scales Jr. (Major General, U.S. Army, ret.; Independent Consultant), Lessons Learned from the Iraq War
Dava Sobel (Author), Galileo in the Applied Physics Laboratory
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Raymond W. Baker (Trinity College), The Future of Islam: Egypt and the New Muslims
Steven Bellovin (Columbia University), Permissive Action Links and the History of Public Key Cryptography
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Duane W. Deal (Brigadier General, USAF), Beyond the Widget: Columbia Accident Lessons Affirmed
Francis M. Deng (JHU School of Advanced International Studies), A Clash of Identities: Darfur’s Crisis in the National Context
Douglas Farah (Author and Journalist), Diamonds, Weapons, and Passports: The Strategic Challenge of Failed States to U.S. National Security
Orlando Figueroa (NASA Deputy Associate Administrator for Programs in the Science Mission Directorate), Science and the Vision for Space Exploration
Stephen Flynn (Council on Foreign Relations), America the Vulnerable: Can the Homeland Be Secured?
Robert E. Gold (APL), Defending the Earth from Asteroid Impacts
Colin S. Gray (University of Reading, England), What Do We Know About Future Warfare?
Thomas X. Hammes (Colonel, USMC; National Defense University), The Sling and the Stone: On War in the 21st Century

Peter Heller (International Monetary Fund), Confronting Long-Term Fiscal Challenges
Stamatios Krimigis (APL), Cassini at Saturn: Wonders of the Giant Planet Revisited
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Hans Mark (University of Texas, Austin), Naval Applications of Electro-Magnetic Guns
David J. Nagel (George Washington University), Low-Energy Nuclear Reactions: Problems, Progress, and Prospects
Norman Polmar (Analyst, Consultant, and Author), Surprise! U.S. and Western Intelligence and Warning Failures During the Cold War
Louise Richardson (Radcliffe Institute for Advanced Study), Democracy and Counterterrorism: Lessons from the Past
Michael Scheuer (Anonymous Author; CIA, ret.), They Still Don’t Get It: The Danger of Ignoring Reality in the War on Terrorism
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John Stenbit (Formerly CIO and Assistant Secretary of Defense for C3I), Why Net-Centric?
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Steven M. Anlage (University of Maryland), Physics and Applications of Negatively Refracting Electromagnetic Materials
Tom P. M. Barnett (Author and Strategic Planner), Warfighting in the Twenty-First Century
Ron Beard (Naval Research Laboratory), The Future of the UTC Time Scale
Richard Carmona (Vice Admiral, U.S. Surgeon General), Hispanic Heritage Month Lecture
Christopher Coker (London School of Economics), Ethics of the Long War
Victor N. Corpus (Brigadier General, Armed Forces of the Philippines, ret.), American Crossroad
Bruce A. Dale (National Geographic), A Lifetime of BAD Photographs
David Dinges (University of Pennsylvania), Sleep, Fatigue, and Stress: Monitoring Human Behavioral Capability
Frank Doyle (University of California, Santa Barbara), A Systems Approach to Modeling and Analyzing Biological Systems
Nathaniel Fick (Former Captain, USMC), The Wars in Afghanistan and Iraq: A Junior Officer's Perspective on What We've Learned and Where We're Going
Husain Haqqani (Carnegie Endowment for International Peace), Pakistan: Between Mosque, Military, and Nuclear Weapons
Kay Jamison (Johns Hopkins School of Medicine), Scientific Exuberance
Ted G. Kamatchus (Sheriff, Marshall County, Iowa), A Sheriff's View of Homeland Security
Theodor Krauthammer (Pennsylvania State University), R&D Needs for Effective Blast, Shock, and Impact Mitigation
Mark Lewis (USAF Chief Scientist), Speed as a Critical Issue for the USAF
Geoffrey Ling (DARPA), Revolutionizing Prosthetics
Carey Lisse (APL and University of Maryland), Deep Impact and Comet Tempel 1: From Evolved Surface to Interior Primordial Dust
Another tradition, noted earlier, is a luncheon with the colloquium speaker and 6–12 APL staff preceding the lecture. Typically the conversation evolves around the speaker and the lecture topic, offering an excellent opportunity to further “pick the brain” of the speaker in a one-on-one mode. A different group of APL participants attends each of the colloquium luncheons. In some cases, the luncheon participants are present because they have helped organize the particular colloquium or they have an acquaintance with or some connection to the speaker. Other participants have been invited to attend “out of the blue” because their Professional Staff resume indicates a connection to the speaker or the subject. An informal refreshment period in the lobby outside the auditorium follows the lecture and offers the possibility of a direct conversation with the speaker. The speakers also enjoy the experience of addressing and conversing with the diverse and sophisticated APL audience.

Interest in the colloquium remains high, with many suggestions for future colloquium speakers coming from all quarters of the Laboratory. Current topics of interest include science, engineering, technology, intelligence, military affairs, public policy, current events, legal issues, financial questions, health interests—and the list goes on. By volunteering suggestions, the APL staff influences the evolution and diversity of topics and guides the future direction of the colloquium. In this way, the APL Colloquium is expected to continue to offer a rewarding opportunity for APL staff to be apprised of interesting and important things happening in today’s and tomorrow’s world.

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THE AUTHOR

David M. Silver received his B.S. in 1962 from the Illinois Institute of Technology, his M.A. in 1964 from The Johns Hopkins University, and his Ph.D. in 1968 from Iowa State University. He was a National Science Foundation Postdoctoral Fellow at Harvard University from 1968 to 1970, and a Visiting Scientist at the Faculty of Science, University of Paris XI, Orsay, France, in 1970. Dr. Silver began his APL career in 1970 in the Research Center (currently the Research and Technology Development Center). He is a member of the Principal Professional Staff and from 1977 to 1995 had been a Group Supervisor in Chemical Physics, Computational Physics, and Fluid Mechanics. He was the J. H. FitzGerald Dunning Professor in the JHU Wilmer Eye Institute from 1998 to 1999, and a Visiting Professor in Ophthalmology at the Debrecen University Medical Center in Hungary in 2001. His research interests include molecular physics, combustion, computational electromagnetics, spacecraft-induced contamination environments, and ophthalmology. Since 2002, Dr. Silver has been in charge of the APL Colloquium and has been the Editor-in-Chief of the Johns Hopkins APL Technical Digest. His e-mail address is david.m.silver@jhuapl.edu.