

RESUMÉ

Dr. William C. Priedhorsky
Program Director, Laboratory Directed Research and Development
Los Alamos National Laboratory
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Los Alamos National Laboratory
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(505) 667-5204
Born Tacoma, WA

EDUCATION:

Whitman College, B. A. *summa cum laude with honors*, Phi Beta Kappa, Physics 1973
California Institute of Technology, Ph.D., observational x-ray astronomy, Physics 1978

ACCOMPLISHMENTS:

2007 – date **Program Director, Laboratory Research and Development**

Responsible for execution and strategy of primary Los Alamos
R&D reinvestment program, totaling \$108 M/annum

2006 - 2007 **Chief Scientist, Threat Reduction Directorate**

Coordinator, Los Alamos National Laboratory Fellows

2004 - 2006 **Chief Scientist, International, Space, and Response Division**

Deputy coordinator, Los Alamos National Laboratory Fellows, 2005-2006
Laboratory Directed Research Strategy Team, 2005
Member, cooperative research oversight committee, LANL-UCSD & NMSU
Adjunct professor of physics, University of New Mexico
Chair, Decision Applications Division Science Council

2003 **Science Advisor, Threat Reduction Directorate**

Champion for creativity across the directorate, responsible for Directorate
strategic plan for Science and Technology.

1999-2003 **Chief Scientist, Nonproliferation and International Security Division**

Serving as a “champion for creativity” in an 800-employee division that executes
both fundamental and applied research. Division Laboratory Directed Research
and Development funding increased by approximately 100% under my tenure.

Developed scientific strategy in the areas of treaty verification, proliferation
detection, nuclear safeguards, space science, and international technology;
coordinating proposals to execute that strategy with internal and external
funding.

Submitted first NASA proposal for Lobster x-ray all-sky monitor mission

Senior scientist on XMM/Newton survey of the x-ray population of Andromeda
galaxy

Laboratory Directed Research Strategy Team, 1999-2002, determining overall exploratory research strategy for Los Alamos

Los Alamos University Relations Council, 2001-

APS Study Group on the Science and Technology of Boost-Phase Defense, 2001-2003

Presented Los Alamos Frontiers of Science lecture, on high-energy astrophysics, to audiences that totaled 1000.

Co-inventor of muon radiography, a technology for radiographic inspection using cosmic-ray muons without an artificial source of radiation. Author of #1 ranked LDRD/DR project for follow-on project, "Radiography with Background Radiations"

1995-1999 Lead Project Leader, NIS-Research and Development Program Office

Scientific Leadership of Proliferation Detection and Characterization at Los Alamos, managing R&D program of \$15-20M/year.

Principal Investigator, Hard and Deeply Buried Target Defeat, 1997-2000

Intelligence Community Neuroscience School and Working Group, 1996

Visiting Scientist, Defense Intelligence Agency Underground Facilities Center, 1997

Visiting Scientist, National Reconnaissance Office, 1998

1981-1995 Staff Member, Astrophysics and Radiation Measurements Group

Executed a wide range of astrophysics research, including theory, analysis, observations, and instrumentation, especially the study of long-term x-ray source variations with the Vela x-ray all-sky monitor.

Led a DARPA-funded study of space nuclear device detection, 1982-1983

Organized four Los Alamos/Taos scientific workshops, 1983-1986

Conceived and led the ALEXIS ultrasoft X-ray satellite project from 1988 to its 1993 launch. ALEXIS continues to operate 10 years after the beginning of its planned 1-year mission. At \$20M for instruments and satellite bus, ALEXIS set a new standard for high performance at modest cost.

NASA High Energy Astrophysics Management Working Group, 1990-1992

Conceived and led the MOXE (Monitoring X-ray Experiment) instrument for the planned Russian space observatory Spectrum-X-Gamma, 1989-1998. Instrument now in storage due to failure of mission to launch.

Invented "Remote Ultralow Light Imaging" concept for starlight and 3-dimensional imaging, 1988, led successful demonstration of both concepts.

1985-1986 Max Planck Fellow, Max Planck Institute for Extraterrestrial Physics; Garching, West Germany

Discovered novel phenomena in x-ray sources, including the binary star with the then-closest known orbital separation, and co-discovered quasi-periodic oscillations in cosmic x-ray sources.

- 1994-1995 **Visiting Scientist, Danish Space Research Institute, Lyngby, Denmark;
University of Melbourne; Melbourne, Australia**
Developed new concepts for x-ray sensing with novel wide field optics, which set the astrophysics community on the path to the Lobster high-sensitivity x-ray all-sky monitor.
- 1978-1981 **Staff Member, Laser Fusion Program, Los Alamos National Laboratory**
Developed time-resolved, spectral, and imaging X-ray instrumentation, including filter spectrometers and a novel crystal spectrometer based a turn-of-the-century paper by Rutherford
Discovered extremely energetic electrons in 10.6 μm laser-plasma interaction (1980)
- 1973-1977 **Research Associate, X-ray astronomy Group (Prof. Gordon Garmire), California Institute of Technology**
National Science Foundation Fellow
Continued my research career with the development of a soft x-ray astronomy rocket payload, analysis of data from its successful flight, and extensive ground-based observations including some of the pioneering work on AM Her cataclysmic variables.
- 1968-1973 **High School and Undergraduate Research**
University of Washington (oceanography), Montana State University (physics), Pacific Northwest Laboratory (aeronomy), Argonne National Laboratory (chemical physics)

RESEARCH: High-energy astrophysics; X-ray, remote sensing, and radiographic instrumentation

MEMBER:

American Astronomical Society
American Physical Society
Los Alamos Mountaineers (president 1985, 2003, 2004)

AWARDS:

Los Alamos National Laboratory Distinguished Performance Awards, 1983, 1992
Max Planck Fellow, 1985-1986
Sir Thomas Lyle Fellow, University of Melbourne, 1994-1995
Whitman College Alumnus of the Year, 1995
Los Alamos National Laboratory Fellow, 1997 (Selected as one of the top 2% of the technical staff at Los Alamos; one of the youngest fellows, aged 44, at the time of my selection)
Los Alamos National Laboratory Frontiers in Science Lecturer, 2003
Leo Szilard Award, American Physical Society, 2005
Fellow, American Physical Society, 2006

Selected publications, August 2006

Dr. William C. Priedhorsky

W. C. Priedhorsky, J. J. Bloch, S. P. Wallin, W. T. Armstrong, O. H. W. Siegmund, J. Griffee, and R. Fleeter, "The ALEXIS Small Satellite Project: Better, Cheaper, Faster Faces Reality", *IEEE Trans. Nucl. Sci.* **40**, 863 (1993).

Priedhorsky, W. C., Smith, R. C., and Ho, C., "Laser Ranging and Mapping with a Photon-Counting Detector", *Applied Optics*, **35**, 441-452 (1996).

Konstantin N. Borozdin, Gary E. Hogan, Christopher Morris, William C. Priedhorsky, Alexander Saunders, Larry J. Schultz, Margaret E. Teasdale, "Radiographic Imaging with Cosmic Ray Muons", *Nature*, **422**, 277 (2003).

P. M. Ogle, K. O. Mason, M. J. Page, N. J. Salvi, F. A. Cordova, I. M. McHardy, and W. C. Priedhorsky, "Relativistic OVIII Emission and Ionized Outflow in NCG 4051 Measured with XMM Newton", *Ap. J.*, **606**, 151-167 (2004).

William C. Priedhorsky, Konstantin N. Borozdin, Gary E. Hogan, Christopher Morris, Alexander Saunders, Larry J. Schultz, and Margaret E. Teasdale "Detection of High-Z Objects using Multiple Scattering of Cosmic Ray Muons", *Reviews of Scientific Instruments*, **74**, 4294-4297 (2003).

William C. Priedhorsky and Thomas R. Hill, "Identifying Strategic Technology Directions in a National Laboratory Setting: A Case Study", *Journal of Engineering and Technology Management*, **23**, 168-181 (2006).

William C. Priedhorsky, Richard D. Belian, Steven P. Brumby, D. Roussel-Dupré, David J. Lawrence, Edward E. Fenimore, Maya Gokhale, John T. Gosling, Cheng Ho, Stephen O. Knox, Geoffrey D. Reeves, David M. Suszcynsky, W. Thomas Vestrand, and Jay A. Schecker, "Eyes in Space – Sensors for Treaty Verification and Basic Research", *Los Alamos Science*, **28**, 152 (2003).

Roger C. Byrd, Joel M. Moss, William C. Priedhorsky, Kevin J. Saeger, W. Robert Scarlett, Sara C. Scott, Richard L. Wagner, Carolyn A. Pura, Gary W. Richter, "Nuclear Detection to Prevent or Defeat Clandestine Nuclear Attack", *IEEE Sensors Journal*, **5**, 593-609 (2005).

with the American Physical Society Study group, "Boost-Phase Intercept Systems for National Missile Defense", *Reviews of Modern Physics supplement*, **76**, S1 (2004).

William Priedhorsky and Jeffrey J. Bloch, "Optical detection of rapidly moving objects in space", *Applied Optics-Lasers, Photonics, and Environmental Optics*, **44**, 423 (2005).

Priedhorsky, W., "Physical and economic limitations for distributed nuclear sensing", *Journal of Nuclear Materials Management*, **34**, 4-12 (2006).

Klimenko, W. Priedhorsky, N. Hengartner, and K. Borozdin, "Efficient Strategies for Low Statistics Nuclear Searches", *IEEE Trans. Nucl. Sci.*, **53**, 1435-1442 (2006)

"SNM-DAT: simulation of a heterogeneous network for nuclear border security", R. Nemzek, G. Kenyon, A. Koehler, D. Lee, W. Priedhorsky, and E. Raby, *NIM-A*, in press (2007).

A.V. Klimenko, C.L. Morris, W.C. Priedhorsky, K.N. Borozdin, L.J. Schultz. "Fusing Signatures of Different Physical Processes in Muon Tomography", *MARC VII Conf.*, Kailua-Kona HI (2006).