Frederick J. Gilman Buhl Professor of Theoretical Physics Director, McWilliams Center for Cosmology Carnegie Mellon University Pittsburgh, Pennsylvania 15213

EXPERIENCE

Carnegie Mellon University Pittsburgh, Pennsylvania 15213 1995 - present

- Dean, Mellon College of Science (2007 2016)
 Provide leadership and management to the Departments of Biological Sciences, Chemistry, Mathematical Sciences, and Physics, with budgets for operations of \$32M and for research of \$40M. Raised approximately \$20M in gifts from alumni and foundations. Led a fundamental re-envisioning and implementation of the undergraduate science curriculum underpinned by a broad, multi-year faculty effort starting from learning outcomes.
- Director, McWilliams Center for Cosmology (2007 present)
 Established and grew a multidisciplinary Center involving Physics, Statistics, and Computer
 Science. Led searches resulting in six junior-faculty hires, multiple McWilliams postdoc hires,
 and leadership roles in frontier sky surveys into the 2030s

• Head of the Department of Physics (December 1999 – November 2008)

- Conducted research in particle physics; Principal Investigator (1996 1999) for the DOE grant to CMU for both experimental and theoretical high energy physics research
- Taught undergraduate and graduate physics courses as professor and as Head ranging from Energy and Environmental Issues for non-majors and Physics II for Engineering Students to advanced QFT for graduate students in particle physics. Participated in the graduate admissions process, graduate qualifying exam, and other faculty activities related to education and research.
- As Head of Physics and Chair of the Physics Planning Committee generated departmental consensus on long-term goals for the 2001 (Biological Physics Initiative) and 2007 (Cosmology and Quantum Electronics Initiative) Physics Advisory Boards.
- Re-instituted bringing leading scientists to CMU annually as Buhl Lecturers to interact with faculty and students and give the public Buhl Lecture (1996 present)
- Member of the CMU Faculty Senate and its Faculty Affairs Committee (Chair 1997 1999) that led to a new policy to provide faculty retirement options; Vice Chair and Chair of the CMU Faculty Senate (1999)
- Member of the CMU Strategic Planning Task Force on Competitive Position (1996 1997) and Strategic Planning Group (1997 1998); Member of the CMU Strategic Planning Committee 2008

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• Chair, Mellon College of Science Review Committee and member of the Mellon College of Science Strategic Planning Committee (1998)

Superconducting Super Collider Laboratory 1990 - 1995 Dallas, Texas

Associate Director and

Head of the Physics Research Division 1990 - 1994 Deputy Director 1994 – 1995

- Developed the scientific staffing structure for the Laboratory and chaired its Scientific Staff Committee. Established, recruited, and nurtured internal experimental and theoretical physics groups that grew to over 50 physicists.
- Planned, recruited, and managed the Physics Research Division within budget during growth to 370 scientific, technical, project management personnel and annual budget of over \$70M
- Developed and implemented overall plan to manage the SSC experimental research program that included two detector-laboratories, each with 1000 collaborating scientists worldwide; established technical, cost, and schedule baselines; interacted with diverse people representing the international scientific community, US and foreign governments, and the State of Texas. Documented technical achievements and helped transfer the relevant pieces for incorporation in CMS and ATLAS at the LHC.

Stanford Linear Accelerator Center Stanford University Stanford, California

1967 - 1990

Professor 1973 - 1990 Associate Professor 1969 - 1973 Research Associate 1967 - 1969

- Carried out research in theoretical physics, especially in the nature of CP violation, the physics of heavy quarks, and the phenomenology of electroweak interactions; gave numerous review talks and lectures at international conferences and summer schools
- Acted as thesis advisor for ten Stanford Ph.D. students; organized and lectured in the annual SLAC Summer Institute of Particle Physics aimed at the postdoctoral level (1976 1990)
- Served as a member of many laboratory and professional advisory committees both inside and outside of Stanford; served on and chaired the Executive Committee of the Division of Particles and Fields of the American Physics Society; organized and participated in national high energy physics study groups
- Long-term visitor at Fermilab, Caltech, the Institute for Advanced Study, and the Weizmann Institute

California Institute of Technology Pasadena, California

1965 - 1967

Research Fellow in Theoretical Physics (Advisor: M. Gell-Mann)

• Carried out research in theoretical high energy physics, with particular emphasis on broken Symmetries, current algebras, and sum rules for strong and electromagnetic interactions

EDUCATION

Princeton University 1962 - 1965 Ph.D. in Physics (Advisor: M. L. Goldberger)

Michigan State University 1958 - 1962 B.S in Physics

AWARDS/HONORS

Fellow of the American Physical Society (1985)

Citation: For highly original and timely contributions to the phenomenology of elementary particle reactions, especially for his creative interplay with the experimental program at SLC, including the elucidation of scaling behavior in deeply inelastic scattering.

Member of three-student team placing first in North America in the 1961 William Lowell Putnam Undergraduate Mathematics Competition

National Science Foundation Postdoctoral Fellow 1965 - 1966

National Science Foundation Predoctoral Fellow 1962 – 1965

OTHER PROFESSIONAL ACTIVITIES

2015 - Present	Member of the Major Policy Committee for the Hunt Botanical Institute
2014 - present	Member of the MPC Corporation (Carnegie Mellon and University of Pittsburgh joint venture) Board of Directors
2012 - present	Member, Board of Councilors, Okinawa Institute of Science and Technology
2012 - 2016	Member, Executive Board, LSST Dark Energy Science Collaboration

2012 - present	Member of the Board of Directors of the Association of Universities for Research in Astronomy (AURA).
2012- present	Chair of the AURA Management Council for the LSST (AMCL) overseeing construction of the LSST.
2009 - present	Member of the Board of Directors of the Large Synoptic Survey Telescope Corporation (LSSTC); Member of the Executive Board of the LSSTC (2010-2016)
2007	Co-Organizer, China-US Workshop on Possible Parity Restoration at High Energy, June 11-12, 2007, Beijing China
2006	Co-Organizer, China-US Workshop on Future PRC-US Cooperation in High-Energy Physics, June 11-18, 2006, Beijing, China.
2006	Member, NSF LHC Operations Review Panel
2005	Member, NSF Review Panel for the Kavli Institute of Theoretical Physics at UCSB
2005	Member, DOE/NSF HEPAP-NSAC Neutrino Scientific Assessment Group
2005	Member, DOE/NSF HEPAP LHC-LC Subpanel
2004	Member, DOE/NSF HEPAP Quantum Universe Subpanel
2003	Member, DOE/NSF HEPAP Particle Physics Project Prioritization Panel (P5)
2002	Member, Subpanel on Performance Measurement in the DOE Office of Science
2001	Member, NSF/DOE HEPAP subpanel on Long Range Planning
1999 – 2005	Chair, HEPAP
1997 - 1998	Chair, HEPAP subpanel on "Planning for the Future of U. S. High Energy Physics"
1995 - 2008	Co-senior Advisor to the Institute of High Energy Physics in Beijing under the US-China Joint Agreement on High Energy Physics
1995 - 1997	Member, NSF Special Emphasis Panel for Elementary Particle Physics
1995 - 1998	Member, URA Visiting Committee for Fermilab
1995 - 1997	Member, Review Committee, Physics Division, Lawrence Berkeley National Laboratory

1993	Dothan Memorial Lecturer, Tel Aviv University
1990 - 1995	Member, High Energy Physics Advisory Panel (HEPAP) to the Department of Energy
1989	Member, HEPAP subpanel on "High Energy Physics and the SSC Over the Next Decade"
1989 - 1992	Member, Brookhaven Program Advisory Committee
1988 - 1992	Member, Advisory Board, Institute of Theoretical Physics, UC Santa Barbara
1988	Chairman of the Steering Committee for Snowmass 88: Summer Study on High Energy Physics in the 1990s
1989	Chairman, Division of Particles and Fields, American Physical Society
1988 - 1991	Member, Advisory Board, Modern Physics Letters A and International Journal of Modern Physics A
1987	Chairman, Sakurai Prize Committee of the American Physical Society
1985 - 1988	Editor, Journal of Modern Physics A
1985 - 1988	Editor, International Journal of Modern Physics A
1985	Member, SSC Detector Cost/Model Advisory Committee
1983 - 1985	Member, Editorial Board of The Physical Review
1982	Visiting Professor, Weizmann Institute
1981 - 1984	Member, Review Committee, High Energy Physics Division, Lawrence Berkeley Laboratory
1980 - 1985	Member, Cornell Program Advisory Committee
1978 - 1981	Member, Fermilab Program Advisory Committee
1978 - 1980	Member, Particle Data Group Review Committee
1976 - 1990	Co-Director, Stanford Linear Accelerator Center Summer Institute on Particle Physics
1974	Visiting Professor, Institute for Advanced Study
1976 - 1981	Member Experimental Program Advisory Committee of the Stanford Linear Accelerator

Center

1973	Visiting Professor, California Institute of Technology
1972 - 1974	Member, Executive Committee, Division of Particles and Fields, American Physical Society
1972 - 1974	Member, Bevatron Scheduling Committee
1972	Visiting Professor, Fermilab
1969 - 1972	Member, Stanford Linear Accelerator Center, Program Advisory Committee