

# VITAE, PROFESSOR LOYAL DURAND

## PRESENT POSITION:

Professor of Physics, University of Wisconsin, 1965--2000, Chair, 1969--71  
Professor Emeritus, 2000--

## OTHER POSITIONS:

[Coach, Yale lightweight crew](#): freshman crew 1953-55, varsity, 1955-57  
EARC champions, undefeated, 1955

Member, Institute for Advanced Study, 1957--59; September-December, 1975  
National Science Foundation Postdoctoral Fellow, 1957-59  
Research Associate, Brookhaven National Laboratory, 1959-61  
Visiting Professor, University of Colorado, summers, 1960, 1961  
Assistant Professor of Physics, Yale University, 1961-65  
Visiting Staff Member, Theory Division, Los Alamos National  
Laboratory, January-May, 1976  
Guest Scientist, Fermi National Accelerator Laboratory,  
September 1982-May 1983  
Faculty Associate, Argonne National Laboratory, 1984, 1985  
Consultant, Los Alamos National Laboratory, 1976-1997

## RESEARCH INTERESTS

Theoretical physics, mostly high-energy physics, with an emphasis on elementary particle interactions including strong interactions, Higgs-boson physics, chiral interactions, and nonperturbative approaches to scattering and bound state problems; mathematical physics, special functions, semigroups and addition formulas, fractional Lie operators.

## HONORS:

Fellow, American Physical Society  
Member, of Sigma Xi, The Scientific Research Society  
[Fellow, University of Wisconsin Teaching Academy](#)  
[Winner of Chancellor's Teaching Award, 1997](#)

Coaching honored by the [Durand Cup rowing trophy](#)  
In competition since 1958 among Yale-Dartmouth-Rutgers

## EDUCATION:

B.S. (Physics) Yale University, 1953, Highest Honors  
Yale Club of New York Prize, 1950

Skiddy Scholar, 1951-53  
Senior Mathematics Prize, 1953  
Phi Beta Kappa, 1953

M.S. (Physics) Yale University, 1954  
Sloane-Silliman Fellow, 1953-54  
Leigh Page Prize in Physics, 1954

Ph.D. (Physics) Yale University, 1957  
National Science Foundation Predoctoral Fellow, 1954-56  
Sterling Fellow, 1956-57  
Sigma Xi, 1957

## **MEMBERSHIPS:**

American Physical Society (Fellow)  
American Mathematical Society  
American Association for the Advancement of Science  
American Association of the University Professors  
Sigma Xi, The Scientific Research Society  
Phi Beta Kappa

## **PERSONAL:**

Born May 19, 1931, Madison, Wisconsin  
Married Bernice Black, 1970  
Children (previous marriage): Travis, Tim, and Chris Durand

## **BIOGRAPHICAL RECOGNITIONS:**

American Men and Women of Science  
Who's Who in America  
Who's Who in Science and Engineering

## **SCIENTIFIC ACTIVITIES**

### **American Physical Society (Fellow):**

Chair, Nominating Committee, APS Division of Particles and Fields, 1972, 1973 (chair)  
Chair, Ad Hoc Committee on International Meetings, APS Division of Particles and Fields, 1974, 1975  
Nominating Committee, APS Division of Particles and Fields, 1987

### **Advisory positions:**

Member, High Energy Physics Visiting Committee, University of Illinois-Chicago, 1968  
Member, Physics Advisory Committee, National Accelerator Laboratory, 1969-71  
Member, Long-Range Planning Committee, Fermi National Laboratory, 1972-74  
ZGS Program Committee, Argonne National Laboratory, May 1977-Dec. 1979

Consultant, Theory Division, Los Alamos National Laboratory, 1976-97

### Aspen Center for Physics:

Member of the Executive Committee, 1964-68

Chair, Executive Committee, 1968-76

President, 1972-76

Trustee and General Member of the Corporation, 1968-80

Honorary Trustee, 1980--

General Member of the Corporation, 1990-99

Honorary Member of the Corporation, 1999--

Organizing Committee, Aspen Winter Conferences, 1985-88; Chair, 1986, 1987 Particle Physics Conferences

### **Editorial Activities:**

Associate Editor, *Journal of Mathematical Physics*, 1973-75

Editorial Committee, *Annual Reviews of Nuclear and Particle Science*, 1984

Co-editor, *High Energy Physics, 1980 (XX International Conference, Madison, Wisconsin)*, 1981

Editor, *Proceedings of the Second Aspen Winter Particle Physics Conference*, 1987

### **Conference organization:**

Committee, 1969 Spring Institute for Theoretical Physics at the University of Wisconsin--Madison

Organizer, International Conference on "Expectations for Particle Reactions at the New Accelerators" at the University of Wisconsin-Madison, March 30-April 1, 1970

Organizing Committee, Advanced Seminar on Special Functions, University of Wisconsin-Madison, April 1975

Co-chair and Principal Organizer, XX International Conference on High Energy Physics (sponsored by IUPAP)

Organizing Committee, Aspen Winter Particle Physics Conferences, 1985-1989; Chair, 1986, 1987

### **Referee for:**

American Journal of Physics

Annals of Physics

Astrophysical Journal

International Journal of Modern Physics A

Journal of Approximation Theory

Journal of Computational and Applied Mathematics

Journal of Mathematical Physics

Modern Physics Letters A

Physical Review D, E

Physical Review Letters

Physics Letters B

SIAM Journal of Mathematical Analysis

Zeitschrift für Physik C

### **Reviewer, Research Proposals for:**

National Science Foundation (Theoretical Physics Division)

U.S. Department of Energy (Physical Research Program)

Research Corporation  
International Science Foundation

**Sigma Xi, The Scientific Research Society:**

Board of Electors, Wisconsin Chapter of Sigma Xi, 1985-88  
President, 1989-90

**Ph.D. STUDENTS**

Yam Tsi Chiu, Yale University, 1965  
*Single particle exchange models at high energies*  
Industrial research and development

[Ian J. McGee](#), Yale University, 1965  
*Theory of inelastic electron--deuteron scattering*  
[Professor Emeritus, Applied Mathematics](#), University of Waterloo, Canada

Phillip Holden, University of Wisconsin, December 1968  
*Kinematic constraints on helicity amplitudes for arbitrary external masses*

[M. Mitchell Waldrop](#), University of Wisconsin, May, 1975  
*Semi-classical approximations for high energy scattering*  
Science writer, Washington, D.C.

Mehmet Cirit, University of Wisconsin, May, 1976  
*Hydrodynamical model of particle production*  
Isparta, Turkey

[Eduardo Mendel](#), University of Wisconsin, August, 1982  
*Field strength formulation of gauge theories*  
Research Physicist, Universität Oldenburg

L.J. Nickisch (joint with B. Durand), University of Wisconsin, August 1984  
*Potential models for relativistic quark-antiquark bound states*  
Mission Research Corporation

Robert Tucci, University of Wisconsin, August, 1985  
*Factorization in QCD in Feynman gauge*  
Formerly MIT Lincoln Laboratories, now owns the [Artiste Company](#), an independent software company,  
tucci@ar-tiste.com

Alan Gara, University of Wisconsin, May, 1987  
*Spin dependent effects in a relativistic theory of quark-antiquark bound states*  
Formerly Researcher at Fermilab and Nevis Laboratories, Columbia  
Now at IBM Thomas J. Watson Research Center, Yorktown, NY  
[Chief Architect, BlueGene/L supercomputer](#)

Hong Pi, University of Wisconsin, August, 1989

*QCD parton model and high energy hadronic collisions*  
Formerly researcher at Lund University and the Oregon Graduate Institute  
Now financial officer

[Jorge L. Lopez](#), University of Wisconsin, August, 1989  
*Phenomenological constraints on four-dimensional superstrings*  
(winner of Sigma Xi dissertation research award, 1989)  
Scientist, Shell E&P Technology Company, Bellaire Technology Center, Houston

[Herbert Dreiner](#), University of Wisconsin, August, 1989 (joint with D.V. Nanopoulos)  
*Model building with four-dimensional fermionic strings*  
Formerly Staff member, Theory Group, Rutherford Appleton Laboratory  
Professor, Physikalisches Institut der Universität Bonn

James M. Johnson, University of Wisconsin, December, 1990  
*Unitarity and symmetry breaking in the standard electroweak model*

Peter N. Maher, University of Wisconsin, December, 1991  
*Two-loop unitarity constraints on the Higgs boson mass*  
In the computer industry, Australia

Katsuhiko Honjo, University of Wisconsin, January, 1994  
*The hadronic structure of the photon in the semiclassical parton picture*  
Technical consultant, Kobe, Japan

Kurt Riesselmann, University of Wisconsin, June, 1994  
*Hints at the onset of strong interactions in the Higgs sector of the standard model*  
(finalist, 1994 Sigma Xi dissertation research award)  
Technical University, Munich, 1994-96  
Staff member, DESY-Zeuthen, Berlin, 1996-2000  
DO-DIRECTORATE (G&A), Fermilab, May, 2000- , [kurtr@fnal.gov](mailto:kurtr@fnal.gov)  
Managing Editor, *Symmetry*, the joint Fermilab/SLAC publication

[Phuoc Ha](#), University of Wisconsin, August, 1999  
*Baryon magnetic moments and masses and in QCD*  
M.S. in Electrical and Computer Engineering, UW-Madison, 2001  
Assistant Professor, Towson State University, Towson, MD

Gregory Jaczko, University of Wisconsin, August, 1999  
*An effective theory of baryons and mesons*  
AIP Congressional Fellow, Washington, D.C.  
Science Advisor, Senate Committee on Environment and Public Works  
Science Advisor and Appropriations Director for Senator Harry Reid  
[Commissioner, U.S. Nuclear Regulatory Commission, 2005-](#)

## **UNIVERSITY ACTIVITIES, UNIVERSITY OF WISCONSIN**

Faculty Senate, 1971-75, 1988-91, 1992-94 (alternate), 1997-2000  
Physical Sciences Division Executive Committee, 1979-82, spring 1984, 1995-98

vice chair 1996-97, chair 1997-98  
Committee on Women in the University, 1995-99  
Planning group on faculty hiring, Women in Science and Engineering Leadership Institute,  
2002-  
Sexual harassment workshop leader (provost's initiative), 2000-  
Ad Hoc Committee on Research Remodeling Problems, 1998-99 (chair)  
Academic Staff Area Review Committee for Administration/Student Services/Library, 1990-93  
Hilldale Lectures Committee, 1981-82  
Chancellor's Research-Service Grant Committee, 1979  
Faculty Consultative Committee on Financial Emergency, 1980-81  
Executive Committee, Center for Mathematical Sciences, 1993--  
L&S Graduate Fellowships Committee, 1992, 1993 (chair)  
L&S Review Committee for the Astronomy Department, 1986 (chair)  
L&S Review Committee for the Mathematics Department, 1993-4 (chair)  
Judge, Engineering Expo, 1985