C U R R I C U L U M V I T A E

PERSONAL DATA:

Martin V. Day
Born November 18, 1951, Berkeley, California

ADDRESS:

Department of Mathematics
Virginia Tech
Blacksburg, VA 24061

EDUCATION:

1973	B.S. Mathematics, California State University at Hayward
1975	M.A. Mathematics, University of Colorado
1978	Ph.D. Mathematics, University of Colorado
	Dissertation: Stochastic Control for a Model of Bacterial Motion
	Dissertation directed by Professor Daniel Stroock

HONORS AND AWARDS:

Graduation summa cum laude (Cal State Hayward)
University of Colorado Graduate Student Fellowships: 1975-76 and 1976-77
University of Colorado Graduate Student Teaching Award, 1978
MAA Student Chapter Teacher of the Year Award, 1989
Certificate of Teaching Excellence, 1991-92

PROFESSIONAL SOCIETY MEMBERSHIP AND SERVICE:

Society for Industrial and Applied Mathematics
Reviewer of proposals for NSF
Referee for numerous academic journals, including Stochastics, J. Stat. Physics, Annals of Probability, Ann. of Applied Probability, Stochastic Processes and their Applications, J. D'Analyse Math., SIAM J. Control and Opt., SIAM J. Appl. Math., J. Math. Anal. and Appl., Proceedings of the AMS, SIAM J. Math. Analysis, Appl. Math. and Opt., Dynamics and Stability of Systems, IEEE Trans. Aut. Control, J. Guidance, Control and Dynamics, Queueing Systems, Applied Mathematics E-Notes.
Special session organizer for the following professional meetings:

- 1989 AMS/SIAM Summer Seminar on the Mathematics of Random Media, Blacksburg, VA (proceedings published as *Mathematics of Random Media*, AMS, Providence RI, 1991).
- The International Symposium on the Mathematical Theory of Networks and Systems, St. Louis, Missouri, June 1996.
- 4th SIAM Conference on Control and its Applications, Jacksonville, FL, May, 1998.
- The International Symposium on the Mathematical Theory of Networks and Systems, Blacksburg, VA, August 2008.

EMPLOYMENT HISTORY:

Sep. 2016 - present — Professor Emeritus, retired

Sep. 1992 - July 2016 — Professor, VPI&SU, Blacksburg, VA

Sep. 1991 - May 1992 — Visiting Assistant Professor for Research, Brown University, Providence, RI (study-research leave from VPI&SU)

Sep. 1986 - Aug. 1991 — Associate Professor, VPI&SU, Blacksburg, VA

Jan. 1986 - Aug. 1986 — Assistant Professor, VPI&SU, Blacksburg, VA

Aug. 1985 - Dec. 1985 — Senior Research Fellow, Institute for Mathematics and its Applications, U. of Minnesota

Sep. 1980 - Aug. 1985 — Assistant Professor, VPI&SU, Blacksburg, VA

Sep. 1979 - June 1980 — Visiting Assistant Professor, Brown University, Providence, RI 02912

Feb. - June 1979 — Visiting Research Associate, Brown University, Providence, RI 02912

INVITATIONS TO MAJOR RESEARCH INSTITUTES:

Invited participant at Institute for Mathematics and Applications (U. Minnesota) program on Stochastic Differential Equations and their Applications for the period of August 15, 1985 to December 16, 1985.

Invited participant in working group on large deviations and PDE, Mathematical Sciences Research Institute (Berkeley), January 22-31, 1991.

INVITED LECTURES:

Control Seminar, EE Department, University of Maryland
Jan. 24, 1980: "On a Stochastic Control Problem with Exit Constraints"

Probability Seminar, Division of Applied Math., Brown University
Nov. 1, 1984: "The Small Parameter Exit Problem: Recent Work on the Exit Measure for Diffusions"

Seminar on Small Random Perturbations of Dynamical Systems, IMA (Minneapolis)
Sep. 25, 1985: "Leveling for the Associated Dirichlet Problem"
Oct. 2, 1985: "Leveling for the Principal Eigenfunction and Exponential Exit Law"
Oct. 9, 1985: "Calculus of Variations and Regularity of the Quasi-Potential"

Workshop on Large Deviation Theory, IMA (Minneapolis)
Nov. 5, 1985: "Recent Progress on the Wentzell-Freidlin Exit Problem"

Center for Control Systems, Brown University
May 22, 1987: "Boundary Local Time and the Exit Problem"

Workshop on Asymptotic Methods for Stochastic Systems, U. MD and U.S. Army
Oct. 27, 1987: "A Probabilistic Interpretation of the Matkowsky-Schuss Technique"

Large Deviations Seminar, Division of Applied Math., Brown University
April, 1988: "On the Exit Problem for Regions with Characteristic Boundary"

Probability Seminar, Courant Institute (NYU)
Sep. 20, 1989: "Some Phenomena of the Characteristic Boundary Exit Problem"

Conference on Diffusion Processes, Northwestern Univ.
Oct. 27, 1989: "Some Phenomena of the Characteristic Boundary Exit Problem"

Probability Seminar, University of Southern California
Feb. 1, 1991: "Conditioning on Exit in the Wentzell-Freidlin Exit Problem"

CRSC Seminar, N.C. State University
March 4, 1997: “Lagrange Manifolds, Hamilton-Jacobi Equations, and a Simple H-infinity Control Problem”

Workshop on Fluctuations, Escape and Optimal Control, Traverse City MI
August, 1997: “Hamilton-Jacobi Equations and Small Noise Phenomena”

4th SIAM Conference on Control and Its Applications, Jacksonville, FL
May 1998: "Construction of Viscosity Solutions in a Traffic Control Problem"

Special Session on Stochastic Processes and Control, AMS Meeting #949, Univ. of N. Carolina, Charlotte
October 15, 1999: "Simple Robust Control Problems in Queueing Theory"

Physics Colloquium, Virginia Tech
Feb. 14, 2003: “Differential Games and Continuous Queueing Service Models”

Stochastic Systems Seminar, Brown Univ.
May 10, 2003, “Differential Games in Queueing: Boundary Extremals and Examples”

Probability and Mathematical Finance Seminar, Dept. of Math., Carnegie-Mellon University
December 10, 2007: “Boundary Conditions and Singularities for Hamilton-Jacobi Equations Arising in Queueing Games”

PUBLISHED ARTICLES (refereed):

On a Stochastic Control Problem with Exit Constraints, Appl. Math. Opt. 6 (1980), pp. 181-188.

Discount Optimality throughout a Set of Parameters for One-Dimensional Transport Processes Z. Wahr. 56 (1981), pp. 515-530.

Exponential Leveling for Stochastically Perturbed Dynamical Systems, SIAM J. Math. Anal. 4 (1982) pp. 532-540.

On the Exponential Exit Law on the Small Parameter Exit Problem, Stochastics 8 (1983), pp. 297-323.

Comparison Results for Diffusions Conditioned on Positivity, J. of Appl. Prob. 20 (1983), pp. 766-777.

Derivative Estimates for Eigenfunctions with Accessible Boundaries and Application to Diffusions, Applicable Analysis 16 (1983), pp. 329-344.

On the Asymptotic Relation between Equilibrium Density and Exit Measure in the Exit Problem, Stochastics 12 (1984), pp. 303-330.

Some Regularity Results on the Ventcel-Freidlin Quasi-Potential Function (co-authored with Tom Darden), Appl. Math Opt. 13 (1985), pp. 259-282.

The Exterior Sphere condition for the Ventcel-Freidlin Quasi-Potential Function, Appl. Math Opt. 14 (1986), pp. 49-54.

Recent Progress on the Small Parameter Exit Problem, Stochastics 20, (1987), pp. 121-150.

Localization Results for Densities Associated with Stable Small-Noise Diffusions, Prob. Th. and Rel. Fields 77 (1988), pp. 457-470.

Boundary Local Time and Small Parameter Exit Problems with Characteristic Boundaries, SIAM J. Math. Anal. 20 (1989), pp. 222-248.

Large Deviations Results for the Exit Problem with Characteristic Boundary, J. Math. Anal. and Appl. 147 (1990), pp. 134-153.

Some Phenomena of the Characteristic Boundary Exit Problem, **Diffusion Processes and Related Problems in Analysis**, Volume 1, pp. 55-72, Birkhäuser, Boston, 1990.

Conditional Exits for Small Noise Diffusions with Characteristic Boundary, Annals of Probability 20 (1992), pp. 1385-1419.

Regularity of Boundary Quasipotentials for Planar Systems, Appl. Math. Opt. 30 (1994), pp. 79-101.

Cycling and Skewing of Exit Measures for Planar Systems, Stochastics 48 (1994), pp. 227-247.

On the Exit Law from Saddle Points, Stochastic Processes and their Applications 60 (1995), pp. 287-311.

Exit Cycling for the Van der Pol Oscillator and Quasipotential Calculations, J. Dynamics and Differential Equations 8 (1996), pp. 573-601.

Characteristic characterization of viscosity supersolutions corresponding to nonlinear H^{∞} control (co-authored with W. M. McEneaney), Proc. 13th IFAC World Congress, Vol.E

(1996), pp.401-406.

On Lagrange Manifolds and Viscosity Solutions (summary), J. Math. Systems, Estimation and Control 8 (1998), pp. 369-372.

Robust L_2-Gain Control for Nonlinear Systems With Projection Dynamics and Input Constraints: An Example From Traffic Control (co-authored with J. Ball, T. Yu and P. Kachroo), Automatica 35 (1999), pp. 429-444.

Mathematical Approaches to the Problem of Noise Induced Exit., in **Stochastic Analysis, Control, Optimization and Applications: A Volume in Honor of W. H. Fleming**, (W. M. McEneaney, G. G. Yin and Q. Zhang, eds.), Birkhäuser, Boston, 1999.

Robust Feedback Control of a Single Server Queueing System (co-authored with J. A. Ball and P. Kachroo), Mathematics of Control, Signals and Systems 12 (1999) pp. 307-345.

Robust Optimal Stopping-Time Control for Nonlinear Systems (co-authored with J. A. Ball and J. Chudoung), Appl. Math. & Optimization 46 (2002), pp. 1-29.

Robust Optimal Switching Control for Nonlinear Systems (co-authored with J. A. Ball and J. Chudoung), SIAM J. Control and Optimization. 41 (2002), pp. 900-931.

Robust Optimal Service Analysis of Single-Server Re-Entrant Queues (co-authored with J. Hall, J. Menendez, D. Potter, and I Rothstein), Computational Optimization and Applications 22 (2002), pp. 261-302.

On the Velocity Projection for Polyhedral Skorokhod Problems, Appl. Math. E-Notes, 5 (2005), pp. 31-35, http://www.math.nthu.edu.tw/~amen/

Boundary-Influenced Robust Controls: Two Network Examples, ESAIM: Control, Optimisation and Calculus of Variations 12 (2006), pp. 662–698.

On Neumann type Boundary Conditions for Hamilton-Jacobi Equations in Smooth Domains, Applied Math. Optimization 53 (2006), pp. 359-381.

Fluid Limits of Optimally Controlled Queueing Networks (co-authored with Goudong Pang), Journal of Applied Mathematics and Stochastic Analysis Vol. 2007 (2007), Article ID 68958 (doi:10.1155/2007/68958), 19 pages.

Simple Singularities for Max-Concave Hamilton-Jacobi Equations and Generalized Characteristics (co-authored with A. A. Melikyan), Journal of Optimization Theory and Applications 138 (2008), pp. 155–174.

A uniqueness result for p-monotone viscosity solutions of Hamilton-Jacobi equations in bounded domains SIAM J. Control and Optimization 47 (2009), pp. 3167–3184.

Fluid limits of optimal time-to-empty queuesing control problems, Applied Math. Optimization 64 (2011), pp. 339-362.

A characterization of the reflected quasipotential (co-authored with Kasie Farlow), Applied Math. Optimization, 72 (2015), pp. 425-468.

BOOK REVIEW:

Functional Integration and Partial Differential Equations, by M. Freidlin, Bulletin of the AMS 17 (1987), pp. 346-351.

RESEARCH GRANTS:

Title:	Investigation of the Small Parameter Exit Problem for Diffusions
P.I.:	Martin V. Day
Grantor:	National Science Foundation, Division of Mathematical Sciences
Grant No.:	DMS-8420755
Amount:	$63,376
Term:	June 1, 1985 through November 30, 1989

Title:	Graduate Student Research in Queueing / Transportation Control
P.I.:	Martin V. Day
Grantor:	Research and Graduate Studies ASPIRES program
Amount:	$11,844
Term:	Summer 2000

Title:	Support for Graduate Student Research in Queueing/Transportation Control
P.I.:	Martin V. Day
Grantor:	College of Arts and Sciences Millennium grant program
Amount:	$5922
Term:	Summer 2000

Title:	Robust Feedback Control and Analysis of Queueing Systems
P.I.	Martin V. Day
Grantor:	National Science Foundation, Applied Mathematics Program
Amount:	$109,980
Term:	9/1/01 - 8/31/04

DOCTORAL STUDENTS:

Mr. Young W. Park, Ph.D. 1991
Dissertation Title: "Large Deviation Theory for Queueing Systems"

Mr. Louis Buterakos, Ph.D. 2003
Dissertation Title: "The Exit Time Distribution for Small Random Perturbations of Dynamical Systems with a Repulsive Type Stationary Point"

Mr. Jose Menendez, Ph.D. 2007
Dissertation Title: "Computational Methods for a Control of Queueing Models in Bounded Domain"

Ms. Kasie Farlow, Ph.D. 2013
Dissertation Title: "The Reflected Quasipotential: Characterization and Exploration"

DEPARTMENT AND UNIVERSITY SERVICE:

Director, Graduate Program in Mathematics, 1995-96 and 1996-97.

Arts and Sciences representative to the Commission on Graduate Studies and Policies, Fall 1996 - Spring 1999.

Chair, Committee on Degree Requirements, Standards, Criteria and Academic Policies (standing subcommittee of the Commission on Graduate Studies), 1997-98 and 1998-99.

Department of Mathematics Graduate Program Committee, member: Fall 1993-2006.

Department of Mathematics Head Election Committee, Chair: 2000-01.

Mathematics Colloquium, Chair: 2002-03.

Department of Mathematics Personnel Committee, member: 1999-01, 2005-07, 2009-10, 20015-16

Mathematics Department Internal Review, main author: 2006-07.

Department of Mathematics Undergraduate Program Committee, member: 1999-02, 2008-10; chair: 2010-11, 2011-12, 2012-13.

College of Science Cluster Hiring Committee, mathematics representative: 2005-06.

Stochastic Analysis Faculty Search Committee, chair: 2014-2015.