

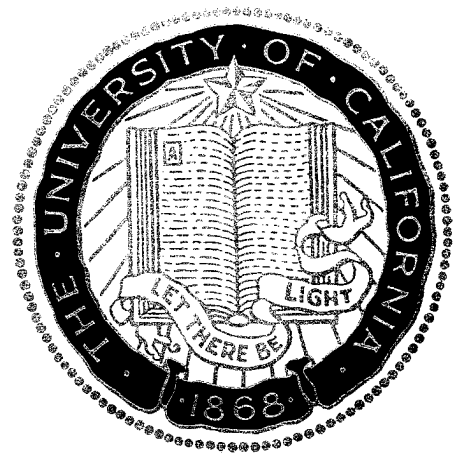
University of California, Berkeley
Department of Mathematics

126th Commencement

Thursday, May 18, 1989, 4:00 PM
Zellerbach Auditorium



COMMENCEMENT 1989



**UNIVERSITY OF CALIFORNIA
AT BERKELEY**

PROGRAM

| | |
|---|---|
| MASTER OF CEREMONIES..... | John W. Addison Jr., Chairman of the Department |
| BERNARD FRIEDMAN MEMORIAL PRIZE..... | Beresford N. Parlett, Immediate Past Director of the Center for Pure and Applied Mathematics |
| CHARLES B. MORREY JR. AWARD..... | Mrs. Charles B. Morrey Jr. |
| VALEDICTORY ADDRESS | David Petrie Moulton, Class of 1989 |
| MATHEMATICAL COMPETITION IN MODELING HONORS | Professor Addison, Faculty Adviser |
| WILLIAM LOWELL PUTNAM COMPETITION HONORS | Lester E. Dubins, Putnam Adviser |
| SECOND-YEAR HONORS | The Chairman |
| PHI BETA KAPPA RECOGNITION | The Chairman |
| PERCY LIONEL DAVIS AWARD | John B. Wagoner, Head Major Adviser |
| DOROTHEA KLUMPKE ROBERTS PRIZE | Tsit-Yuen Lam, Immediate Past Vice Chair for Undergraduate Affairs |
| DEPARTMENTAL CITATION | The Chairman |
| OUTSTANDING GRADUATE STUDENT INSTRUCTOR CITATIONS | William G. Bade, Vice Chair for Graduate Affairs |
| NIKKI KOSE MEMORIAL TEACHING PRIZE | Vice Chair Bade |
| DISTINGUISHED UNDERGRADUATE TEACHING AWARD | Edward L. Bautista, Mathematics Undergraduate Student Association |
| COMMENCEMENT ADDRESS | William Randolph Hearst III, Publisher of the San Francisco Examiner |
| PRESENTATION OF COMMENCEMENT SCROLLS | The Chairman & Vice Chair Bade |

An informal reception will immediately follow the ceremony.

CANDIDATES FOR THE A.B. DEGREE

IN MATHEMATICS

Laura Agapay
Arun Kumar Aggarwal
Michael David Allen
Sean Michael Bates
Edward Lloyd Bautista
Philip Charles Blum
Michael Jon Brower
Theresa Santos-Ocamp Caampued
Richard Guille Cavencia
Kitleigh Jo Clark
Jesus Del Castillo
Hendrik Erik Doeff
Keith David Eaton
Alexis Falicov
Boris Fayn
Eric Russell Fredricksen
Michel James Friesenhahn
Jason Kahn Glenn
Concetta Maria Gomez
Hugh Michael Griffith
David Paul Hillis
David Allan Hubbard

Fletcher Eric Ibser
Arun Kumar Khaitan
Daniel Kenneth King
Steven Andrew Klein
Peter Alexander Korn
Darren Robert Latham
Adam Jonathan Marsh
Ae Kyung Min
David Petrie Moulton
John Arnold Mount
Samuel Moses Muhlmeister
Zachary Miller Nightingale
Diane Marie Pappert
Brian Edward Roark
Lars Richard Rohrbach
Thomas Joseph Senchyna Jr.
Michele Elaine Smart
Kate Anne Strauss
Scott Mitchell Sueoka
Tracy John Thomas
Matthew Kent Wessel

IN APPLIED MATHEMATICS

Chi-Yuen Ban
Lester Strattan Bird
Bradford Tsee-Fai Brack
Vicki Marie Bright
Pamela Hope Brown
Richard Lee Anulacion Cardenas
Andrea Lapsiu Chan
Jai Yong Choi
Wei Sin Chong
Stavros Nicos Christofi
Teresa Hiu-Hung Chu

Jay Hak Chung
Steven Courteau
Thomas Lynch Crimmins
Roel Adonis De Los Santos
Shumita Deb
Paul Edward Ecord
John Andrew Ellis
Francis Kenneth Ford
Barry Mark Freifeld
Sabine Kathrin Furtauer
Hasramputra Guntur

Kunyong Han
Michael David Harvey
Jonathan Hutchinson
Sugih Jamin
Melanie Alyson Jann
Jazmin Sanchez Jonson
Byung Ro Kim
Hee Soon Kim
Juneyub Kim
Clarise Shigeko Kon
Mei Po Kwan
Ellie Ai-Lih Lai
Lam Le
Hsueh Chung Lee
Kevin Lee
Mongwah Lee
Tsuei-Hua Lee
John Mun Leung
Armando Paul Levy
Juan Lu
Michael Evan Mann
Steven Farrell Mark
Bryan Harrison McDonald
Shaun Hugh McEvoy
Patrick Raymond Mebine
James Odric Moore
Christian Sterling Murray
Lisa Marie Negele
Nhat-Khanh Phuong Nguyen
Kimiko Nishiwaki
Joon Sung Park
Leah M. Paule
Yvette Lynn Perry
Kristina Birgitta Pfannkuch
Madhav Ponamgi

David Frank Ranney
Navid Razavi
David Thomas Riddle
Rebecca Scott
Anthony Alexander Shah
Samuel Wei Sheng
Ching Shih
Anthony Glen Silard
Wiganda Ivan Songadiwardhana
Dina B. Street
Zheng-Min Sun
Shamra Lyn Sundahl
Homeyra Tahbaz
Chu Muy Tang
Kristin Ann Taylor
Joel Aubrey Thompson
Kelly Mieko Torikai
Robert Eugene Townsend
Minh Bach Trinh
John Edward Walters II
Handana Halim Wanawijaya
Jane Ching-Ying Wang
Robert Louis Widman
Juliet Renee Wilder
Danny Moon Wong
Eunice Y. Wong
Philip Wong
Ryan Thomas Wong
Suzanne Therese Wong
Suzy L. Wong
Qiu-Mei Yang
Maha Yaser Yaser
Danilo Yu
Irene Wing Wah Yu

CANDIDATES FOR THE M.A. DEGREE

FALL 1988:

Rolf Adams

Nobuyuki Ishida

Richard Rodney Kerswell

Timothy Jay Lane

Joe Mark Montgomery

Gilbert Francois Morin

Duane Wright Pryor Jr.

Larisa Angelique Stephan

Alan James Westcott

SPRING 1989:

Linda Grace Bushnell

Robert Bruce Coffman

Stuart Michael Davidson

Lea Fester

Ali Heydari

Wai-Yu Hui

Karim Jafferli Ladha

Aaron Paul Lerner

Richard Kenneth Lewis

Antonia Edward Lindsey

James Bernard Magee

Linda Jean Milteer

Deborah Fairley Minehart

Helen Hung-Kyun Park

Lisa Emma Sawin

Marjorie Anne Sayer

Marc Shepard

Myra Elaine Snell

William Matthew Wells

Pinghua Young

PH.D. DEGREE CANDIDATES

IN APPLIED MATHEMATICS

FALL 1988:

David John Balaban: *A Geometric Perspective of Experimental Design and Parameter Identification*

Jing Li: *An Algorithm for Computing the Matrix Exponential*

John Andrew Strain: *Numerical Study of Dendritic Solidification*

SPRING 1989:

George Irving Bell: *A Model of Vortex Induced Radiation in the Beta Plane*

Geoffrey Arthur Latham: *Solutions of the Kadomtsev-Petviashvili Equation Associated to Higher Rank Commuting Ordinary Differential Operators*

Jorge Passamani Zubelli: *Differential Equations in the Special Parameter for Matrix Differential Operations of AKNS Type*

IN MATHEMATICS

FALL 1988:

Milos Arsenovic: *A C^* -Algebra of Singular Integral Operations on the Poincaré Plane*

continuing FALL 1988...

William Charles Jagy: *Minimal Submanifolds Foliated by Spheres*

Leonard Adlao Laroco Jr.: *Stable Rank and Approximation Theorems in H^∞*

Tomasz Stanislaw Mrowka: *A Local Mayer-Vietoris Principle for Yang-Mills Moduli Spaces*

Henrik Olov Nordmark: *Higher Order Vortex Methods with Rezoning*

Fiacre Ailbhe O'Carbire: *Ergodic Actions of $SU(2) \times T$ on Operator Algebras*

Robert Bell Rainsberger: *On L^2 Boundedness of Pseudo-Differential Operators*

Barry Jay Weinstein: *On Embeddings of the 1-3-1 into the Recursively Enumerable Degrees*

SPRING 1988: ACTUALLY SPRING 1989...

Alessandro Berarducci: *The Interpretability Logic of Peano Arithmetic*

Maohua Cai: *Boolean Logic in Artificial Intelligence and Turing Degrees of Boolean-valued Sets*

Elise Ellen Cawley: *Smooth Markov Partitions and Toral Automorphisms*

Hung The Dinh: *Discrete Product Systems and Their C^* -Algebras*

Helen Glessler Grundman: *The Arithmetic Genus of Hilbert Modular Threefolds*

Alexander John Izzo: *Uniform Algebras Generated by Holomorphic and Harmonic Functions of One and Several Complex Variables*

Theodore Warren Jones: *Topological Rigidity of Horocycle Flows*

Lars David Kadison: *Cyclic Homology of Extension Algebras with Application to Matrix Algebras, Algebraic K-Theory, and Nest Algebras of Operators*

Emile Alvin Pete LeBlanc: *A Probabilistic Zero Set Condition for Bergman Spaces*

Kin Yin Li: *Applications of de Branges' Theory of Contractively Contained Spaces*

John Edward McCarthy: *Analytic Structures for Subnormal Operators*

Geoffrey Mess: *The Torelli Groups for Genus 2 and 3 Surfaces*

Marco Pavone: *Boundaries of Discrete Groups, Toeplitz Operators, and Extensions of the Reduced C^* -Algebra*

Nicholas Goodrich Torre: *Minimal Hypersurfaces in Compact Symmetric Spaces*

Burt James Totaro: *K-Theory and Algebraic Cycles*

Kevin Michael Walker: *An Extension of Casson's Invariant to Rational Homology Spheres*

Samuel Pollard White: *Two Applications of Galois Theory: A Group Theory Problem of Harvey Friedman and Hodge Rings on CM Abelian Varieties*

Mary Lou Zeeman: *Hopf Bifurcations in the Competitive Three-Dimensional Lotka-Volterra Systems*

LOGIC AND THE METHODOLOGY OF SCIENCE

Keith S. Manson: *Generalized Weyl Representations and the Quantization of Non-Linear Hamiltonian Systems*

HONORS AND PRIZES

MATHEMATICAL COMPETITION IN MODELING

The fifth annual competition was held on the weekend of February 24-26, 1989 with 212 teams from 143 schools participating. Administered by the Consortium for Mathematics and Its Applications, the contest offers undergraduate students the opportunity to compete in a team setting using applied mathematics in the solving of real-world problems. Two teams from Berkeley's Department of Mathematics participated and both of them were among the 39 teams achieving Meritorious standing.

Certificates of Meritorious standing are awarded to:

*Bryan Fredrick Clair, Jordan Lampe, and David Petrie Moulton, and to
Alexis Falicov, Boris Fayn, and Rainer T. Gawlick.*

WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION HONORS

The forty-ninth annual competition was held on December 3, 1988. Thirty students from Berkeley participated. Honorable Mention is awarded to the team from

The Department of Mathematics, University of California at Berkeley

for placing 6th-10th among the 257 institutions from the United States and Canada entering the competition. A certificate is awarded to each of the following members of the team:

I-Lin Kuo, Jordan Lampe, and David Petrie Moulton.

Individual Honorable Mention for placing among the top 2.3 per cent of students competing is awarded to:

David Petrie Moulton.

SECOND-YEAR HONORS

Established in memory of Mellen W. Haskell, Frank Irwin, and Elmer C. Goldsworthy, former faculty members of the Department of Mathematics. A prize of a mathematical book is awarded to that second-year student who has demonstrated the most outstanding scholarship in mathematics.

The 1988-89 honor is given to:

Jordan Lampe

PHI BETA KAPPA RECOGNITION

Election to Phi Beta Kappa is based on outstanding scholarship in all academic subjects.

During 1988-89 this honor was bestowed on the following students in the Department of Mathematics:

*Robert Saiji Kawashima
Li-Wen Kathleen Kuo
David Petrie Moulton
Scott Mitchell Sueoka
Eunice Y. Wong*

PERCY LIONEL DAVIS AWARD FOR EXCELLENCE IN SCHOLARSHIP IN MATHEMATICS

Established by the daughter of Percy Lionel Davis in honor of her father, who graduated in Engineering in 1913. A cash prize is awarded to a senior who has demonstrated excellent scholarship in mathematics.

The 1988-89 awards of \$100 each are given to:

*Michael David Harvey
Matthew Kent Wessel
Eunice Wong*

DOROTHEA KLUMPKE ROBERTS PRIZE IN MATHEMATICS

Established by Mrs. Dorothea Klumpke Roberts, Astronomer, in honor of her parents and husband. A cash prize is awarded to a senior who has demonstrated truly exceptional scholarship in mathematics.

The 1988-89 prizes of \$200 each are given to:

David Petrie Moulton
Zachary Miller Nightingale
Samuel Wei Sheng

DEPARTMENTAL CITATION

This recognition is bestowed on the top mathematics scholar in the graduating class. The name of the citation winner is placed with those of earlier winners on the Departmental Citation Plaque.

The 1988-89 citation is given to:

David Petrie Moulton

BERNARD FRIEDMAN MEMORIAL PRIZE IN APPLIED MATHEMATICS

Established in 1966 as a memorial to Bernard Friedman, a distinguished applied mathematician and ninth Chairman of the Department of Mathematics. A cash prize is awarded to a graduate student who has demonstrated ability to do research in applied mathematics.

The 1988-89 prize of \$250 is given to:

John Andrew Strain

CHARLES B. MORREY JR. AWARD

Established in 1985 to honor the memory of Charles B. Morrey Jr., an outstanding analyst and sixth Chairman of the Department of Mathematics. A cash prize is awarded to a graduate student of promise to encourage pursuit of doctoral research.

The 1988-89 award of \$1000 is given to:

Mladen Despic

OUTSTANDING GRADUATE STUDENT INSTRUCTOR CITATIONS

These citations are presented by the Committee on Teaching of the Berkeley Division of the Academic Senate to those Graduate Student Instructors who have demonstrated exceptional teaching ability.

The 1988-89 citations are given to:

Maria Luisa Bonet
Robert Ives Campbell
Neal Jay Fowler
Diana Ruth Gillooly
Everett William Howe

Kin Yin Li
Lisa Emma Sawin
Christine Joyce Silverio
Graham Andrew Taylor
David Arnold Whitehead

NIKKI KOSE MEMORIAL TEACHING PRIZE

Established in 1981 as a memorial to Nariaki (Nikki) Kose, a graduate student from Japan who died in a mountaineering accident in the summer of 1980. A cash prize is awarded to a Graduate Student Instructor in Mathematics for truly exceptional teaching performance.

The 1988-89 prize of \$100 is given to:

Helen Giessler Grundman

DISTINGUISHED UNDERGRADUATE TEACHING AWARD

Established in 1983 by the Mathematics Undergraduate Student Association (MUSA). It is presented by MUSA and the graduating class to the professor who, in the judgment of the students, contributed most greatly to their mathematical studies.

The 1988-89 award is given to:

Hung-Hsi Wu

HONORS PROGRAM

The requirements for graduation in the **Honors Program** are:

1. A grade-point average of at least 3.3 in all courses undertaken in the University.
2. A grade-point average of at least 3.5 in upper division mathematics requirements for **Honors**, at least 3.690 for **High Honors**, and at least 3.843 for **Highest Honors**.
3. Completion of course H196 in which the student writes a Senior Thesis, or completion of two graduate courses with a grade of at least A- in each.
4. The recommendation of the Head Major Adviser.

The Department of Mathematics is pleased to recognize the following candidates for the Mathematics Honors Program.

Sean Michael Bates
Eric Russel Fredricksen
Concetta Maria Gomez
David Allan Hubbard
Armando Paul Levy
David Petrie Moulton
Zachary Miller Nightingale

ABOUT THE COMMENCEMENT SPEAKER

William Randolph Hearst III was born on June 18, 1949. He received an A.B. degree in Mathematics from Harvard University and has maintained a lifelong interest in "the queen of the sciences".

Hearst is the grandson of William Randolph Hearst, who began his communications empire over a century ago when he took proprietorship of the San Francisco Examiner. William III (more commonly known as Will) was a reporter and assistant city editor of the Examiner from 1972 to 1976 and shared the Roy Howard Prize for investigative journalism.

In 1976, he left the Examiner to become the managing editor of Outside Magazine. He rejoined the Hearst Corporation at the Los Angeles Herald Examiner in 1978 as an assistant managing editor and in 1982 became Vice President of Hearst Cable Communications with responsibilities related to Hearst Cable Systems in the San Francisco Bay Area and to the company's electronic publishing activities. In September 1984 he was named publisher of the San Francisco Examiner.

To the outside world, Hearst is known as a popular civic leader with a youthful and slightly irreverent style and a devilish leer made famous in a refreshingly original series of television commercials. Less well known is Will the Scholar, who sits at the computer workstation in his San Simeon hideaway computing rational points on elliptic curves while occasionally flashing electronic messages to Berkeley to seek advice on his mathematical reading list.

Visionary and creative newspaper publisher and enthusiastic Patron of Mathematics and Science, Will Hearst is living evidence of the wisdom and beauty of an undergraduate education centering around Mathematics.

ACKNOWLEDGEMENTS

The Department is grateful to the following people and organizations for assistance with the commencement ceremony:

| | |
|--------------------|-------------------|
| Anne Ancomb | Michael Sarmiento |
| Haruko Bruce | Mark Tremayne |
| Bettina Butts | Ruth Wightman |
| Catalina Carpenter | Linda Williams |
| Deborah Craig | Faye Yaeger |
| Bernice Gangale | Janet Yonan |
| Sui Jen | Gail Yoshimoto |
| Chris Maier | Jan Zimmerman |

Mathematics Undergraduate Student Association

Special thanks are owed to Professor George Bergman for his advice and support in the preparation of this booklet.

COMMENCEMENT COORDINATORS

Doris A. Smith and André Washington