

# VITA

NORMAN BLEISTEIN

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## Current Status

- University Emeritus Professor, CSM
- Research Professor, Geophysics, CSM
- Guest Professor, Geophysics, Chinese University of Geosciences, Wuhan
- Honorary Member, Society of Exploration Geophysics
- Fellow, Institute of Physics
- Editorial Board and Adjudicating Editor, Inverse Problems
- Advisory Board, Journal of Science and Engineering
- Editorial Board, Earth Science Frontiers, Beijing

## Education

1965	Courant Institute of Mathematical	Ph.D.	Math
1961	Sciences, New York University	M. S.	Math
1960	Brooklyn College	B. S.	Math

## Scholarships and Fellowships

Alexander von Humboldt Foundation Senior Fellowship	University of Karlsruhe
National Science Foundation Fellowship	New York University
Texaco Fellowship	New York University
Research Assistantship	New York University
Teaching Assistantship	New York University
New York State Scholarship	Brooklyn College

## Professional Experience (Summary)

- Guest Professor, Chinese University of Geosciences, Wuhan	Nov. 2002-Present
- Consultant, VeritasDGC	July 2001-Present
- Professor Emeritus and Research Professor of Geophysics	Sept. 1999-Present
- Professor of Mathematics, Colorado School of Mines	1983-Aug. 1999
- Director, Center for Wave Phenomena, CSM	1984-1988
- Director, Center for Wave Phenomena, CSM	1989-1996
- Head, Bleistein Research Company	1972-Present
- Consultant, ADA Technologies	1995-Present
- Partner, Denver Applied Analytics	1977-1989
- Visiting Scientist, Amoco Research Center	Feb, March, 1983
- Professor of Mathematics, University of Denver	1975-1983
- Class A Consultant, Office of Naval Research	1978-Present
- Adjunct Professor, University of Wyoming	1982-1985
- Research Mathematician, Denver Res. Inst. (DRI)	1969-1978
- Associate Division Head, DRI Mathematics	1976-1978
- Visiting Staff Member, Los Alamos Scientific Lab	June, 1973
- Assoc. Prof. Math., University of Denver	1969-1975
- Assist. Prof., Appl. Math, Mass. Inst. Tech.	1966-1969
- Post-Doctoral Fellow, Courant Inst. of Math. Sci.	1965-1966

## Research Contract Awards

- Consortium Project on Inverse Methods for Complex Structure	1984-Present	approx \$10,500,000
- Office of Naval Research, Math. Div.	1991-Present	352,000
- Office of Naval Research, Oc. Ac. Div.	1994-Present	310,000
- Office of Naval Research, Math. Div.	1988-1990	145,000
- Dept. of Energy, Math. and Geosci.	1989-Present	815,000
- Selected Research Opportunities, Inversion in Ocean Environment, Office of Naval Research, Math. Div.	1983-1986	850,000
- Office of Naval Research, Oc. Ac. Div.	1978-1983	685,000
- Office of Naval Research, Math. Div.	1978-1982	402,000
- Dept. of Energy, Math. and Geosci.	1978-1981	327,000
- Rockwell International/ARPA 1977-1980	127,000	
- Nav. Oc. Res. and Dev. Admin.	1975-1978	156,000
- Office of Naval Research, Math. Div.	1975-1978	113,000
- DOE/ERDA, Math. and Geosci.	1974-1978	145,000
- Atomic Energy Com., Math. Div.	1973-1974	105,000
- Office of Naval Research, Math. Div.	1972-1975	75,000
- Air Force Off. Sci. Res., Math. Div.	1970-1972	100,669

## Professional Experience (Detail)

### Colorado School of Mines

- Director, Center for Wave Phenomena, a coordinated interdisciplinary program in the Department of Mathematical and Computer Sciences and the Department of Geophysics, engaged in research and education in direct and inverse scattering problems. Personnel include 5 faculty members, 18 graduate students, 3 staff. Approximate budget: \$1.2 million/year.
- CO-PI, Consortium Project on Seismic Inverse Methods for Complex Structures, supported by thirty-three oil and oil industry related companies., \$1 million/yr.
- Created new courses in methods of applied mathematics, special topics in complex variables, seismic inverse methods.
- Directed 9 PhD theses, 10 Masters' theses.
- Currently directing 1 PhD thesis.
- Member, dean of graduate studies and research advisory committee on research infrastructure.
- Member, vice president's advisory committee on research infrastructure.
- Member, review committee on PERA and related optional retirement plans.
- Member, Research Council, 1984-1987.
- Member, organizing committee, Laboratory for Exploration Research, Colorado School of Mines.
- Member, CSM Institutional Goals Committee (IGC)
- Member, IGC Subcommittee on the role of Research Centers at CSM

### Amoco Research Center

- Developed the theory and designed a computer algorithm for inversion of seismic data in the context of a depth dependent background velocity.

### University of Denver

- Member, Center for Wave Phenomena in the Department of Mathematics and Computer Science.
- Part of a group of four full professors engaged in research on inverse problems with application to seismic exploration and non-destructive testing.
- Directed 7 PhD. theses.

- Wrote a book on mathematical methods for wave phenomena and another on asymptotic expansions of integrals.
- Department representative to the Sponsored Academic Research Council (SPARC) which both set policy and advised the University administration on policy regarding sponsored research activities at the University. Served as SPARC's representative on other committees such as the Chancellor's Financial Accounting Systems Advisory Council.
- Department Graduate Affairs Committee: Contributed to the development of the Applied Mathematics for Professional Advancement (AMPA) program which established new precedents at the University for accessibility of our teaching program to part-time matriculating and non-matriculating students.
- Developed new courses in methods of applied mathematics, partial differential equations, asymptotic expansions, special functions and Fourier analysis.
- Industrial consultant, direct and inverse scattering.

#### **Massachusetts Institute of Technology - 1966-1969**

- Developed a new course in ray methods and associated asymptotic techniques for partial differential equations and a course in partial differential equations.
- Consulted for the MIT Instrumentation Laboratory

#### **Publications**

Listed in supplement; that list includes

- One book, Mathematics of Multi-dimensional Imaging, Migration and Inversion, co-authored with Jack K. Cohen and John W. Stockwell, Jr., Springer-Verlag, 2000.
- One book, Mathematical Methods for Wave Phenomena, sole author, published by Academic Press, 1984
- One book, Asymptotic Expansions of Integrals, co-authored with R. A. Handelsman, published by Holt, Rinehart and Winston, republished by Dover, 1986.
- One encyclopedia article
- Chapters in seven other books
- Eight invited articles
- Approximately sixty papers published in peer review journals
- Approximately thirty unpublished technical reports

### Other Professional Contributions

- Short Courses on Applied Analysis, Asymptotics, Wave Phenomena, Inversion
  - University of Karlsruhe, Spring, 2002, as part of the von Humboldt Senior Fellowship, four months.
  - Department of Applied Mathematics, University of Campinas, Brazil, 3 months.
  - Tarim Petroleum Exploration and Development Bureau, Korla, Xinjing, PRC.
  - Jiangnan Petroleum Institute, Jiangsha, PRC.
  - Shandong University, Jinan, PRC.
  - MIT Earth Resources Laboratory, Dept Earth and Planetary Sciences
  - JAPEX, Tokyo
  - University of Trondheim (Mathematical Inversion)
  - Naval Undersea Systems Center, New London (six courses)
  - Naval Ocean Systems Center, San Diego
  - Naval Research Laboratory, Washington, D. C.
  - Marathon Oil Company, Denver
- Advisory Board, Birkhauser series on Wavelets
- Advisory Board for the NCTM Media Grant: Public Engagement and Understanding Initiative.
- International Advisory Panel, Inverse Problems
- Associate editor, Journal of Seismic Exploration
- (Formerly) Associate Editor, SIAM Journal on Mathematical Analysis
- (Formerly) Associate Editor for SIAM Journal on Applied Math
- Southwestern States Regional Lecturer for SIAM (2 years)
- Reviewed articles for:
 

Inverse Problems	Geophysics	Geophysical Prospecting
Geophysical J International	J of Seismic Exploration	SIAM Math Analysis
SIAM Applied Math	J Theo & Appl Geophys	J Math Physics
IEEE Trans Ant & Prop	J Ac Soc Amer	Radio Science
Wave Motion	J Inst Math & Appl	Proc Roy Soc Edinburgh
Canadian J Math	Studies in Appl Math	Math Reviews
- Grant and Contract Proposal Reviewer
 

ONR, Math	ONR, Oc Acoust	ARO, Math
AFOSR	Math	NSF Earth Sci
NSF, Math, Geosci	AEC/ERDA/DOE, Math,	Geosci

- National Panel on Future Directions of Research in Inverse Scattering, sponsored by AFOSR
- National Panel on Future Directions of Research on the Underwater Environment, sponsored by ONR.

#### Invitations of Note

- Systems of Conservation Laws and Related Topics, Los Alamos National Laboratory, March, 2000.
- 6th International Congress of the Brazilian Geophysics Society, August, 1999.
- XXIst Congress of the Brazilian Society of Applied and Computational Mathematics, Sept. 1999.
- The Mathematical Geophysics Summer School, Stanford University, August, 1998, three lectures.
- XXth Congress of the Brazilian Society of Applied and Computational Mathematics, September 8 to 12, 1997.
- 5th International Congress of the Brazilian Geophysics Society, September 28 to October 02, 1997.
- Lecturer, three week short course, Jiangnan Petroleum Institute, Jiangsha, PRC, 1996.
- Institute of Applied Math, U of Minn, Symposium on Inverse Problems, February, 1994.
- Lecturer, three week short course, Shandong University, Jinan, PRC, August, September, 1992.
- Geophysical Prospecting Bureau, Zhou Zhuo, PRC, September, 1992.
- State Seismological Bureau, Beijing, PRC, September, 1992.
- Research Institute for Petroleum Exploration and Development, Beijing, PRC, September, 1992.
- Three day short course, Japanese Exploration Company, Tokyo, February, 1992.
- Two week short course, Exploration Research Laboratory, Department of Earth and Planetary Physics, Massachusetts Institute of Technology, March, 1992.
- SIAM Conference on Mathematical and Computational Issues in Geophysical Fluid and Solid Mechanics, Houston, September, 1989.
- SIAM Workshop on Geophysical Inversion, Houston, September, 1989.

- First Joint Workshop of the Society of Exploration Geophysicists and the European Association of Exploration Geophysicists on Deconvolution and Inversion, Rome, September, 1986.
- University Scholars Program, University of Tulsa, February, 1985.
- Joint SIAM/SEG/SPE Meeting on Mathematical and Computational Methods in the Exploration and Extraction of Deep Mineral Resources from the Earth, University of Houston, January, 1985.
- International Conference on Inverse Problems of Acoustic and Elastic Waves, Cornell University, June, 1984.
- International Meeting on Problems in Nonlinear Differential Equations, University of Dundee, Scotland, June, 1984.
- University Lecturer, U of Denver, 1983; Lecture, April 20, 1983.
- Joint Amer. Math. Soc./Math. Assoc. of Amer. National Meeting, Workshop on Seismic Inverse Problems, Denver, January, 1983.
- First Joint Japanese American Symposium on Geothermal Exploration, Tokyo, November, 1982.
- Joint German-American Workshop on Progress in Nondestructive Testing, Fraunhofer Institute at the University of Saarbrucken, Germany, September, 1982.
- Soc. for Ind. and Appl. Math. Regional Meeting, Dallas, April, '82.
- International Conference on Mathematical and Computational Methods in the Exploration and Extraction of Deep Mineral Resources, Tucson, Nov. '81.
- International Symposium on Non-Linear Problems in Mathematics - Rice University, Houston, Feb., '81.
- Kranzberg Chair in Electrical Engineering, The Technion, Israel Institute of Technology, Haifa, May, '81.
- Fiftieth Annual Meeting of the Society of Exploration Geophysicists, Workshop on Inverse Methods, Nov., '80.
- International Meeting on Ocean Acoustics, Catholic University, Washington, D. C., May, '79.
- International Meeting on Wave Phenomena in Oceanography, U. of Miami, April, '79.
- National Conference on Electromagnetic Scattering, U. of Illinois, Chicago, June, '76.
- North British Symposium on Differential Equations, U. of Dundee, Jan. - June, '72.

Other invited lectures listed below.

**Peer reviewed papers at international meetings**

- Soc Ind Appl Math (SIAM) Nat Mtg, Washington, D. C. June, 1969
- SIAM Nat Mtg, Boston Oct., 1970
- AMS Nat Mtg, San Francisco Jan., 1973
- IEEE/URSI Nat Mtg, Boulder Oct., 1974
- IEEE/URSI Nat Mtg, Oct., 1975
- SIAM Nat Mtg, San Francisco Dec., 1975
- Soc of Expl Geoph, Houston Nov., 1976
- Symp in Geophysics, Cambridge, England Jan., 1976
- Nat Mtg on Non-Destructive Testing, Cornell June, 1977
- Soc of Expl Geoph, Calgary Sept, 1977
- Denver Geoph Soc Colloquium Series Oct., 1978
- Soc for Engineering Science, Evanston Sept, 1979
- Soc of Expl Geoph (SEG), New Orleans Nov., 1979
- SEG, Dallas Nov., 1982
- SEG, Las Vegas Nov., 1983

**Peer reviewed papers at international meetings (continued)**

- Eur Assoc of Expl Geoph(EAEG), London June, 1984
- SEG, Atlanta Dec., 1984
- EAEG, Budapest June, 1985
- SEG, Washington Oct., 1985
- SEG, Houston Oct., 1986
- SEG, Anaheim Nov., 1988
- SIAM Nat Mtg, San Diego July, 1989
- SEG, New Orleans Oct., 1989
- SEG, San Francisco Sep., 1990
- SIAM Nat Mtg, Chigaco July, 1990
- EAEG, Florence June, 1991
- SEG, Houston Nov., 1991
- SEG, New Orleans Nov., 1992
- SEG, WASHINGTON Nov., 1993
- SEG, Los Angeles Oct., 1994
- Int Cong Ind & App Math, Hamburg July, 1995
- SEG /Russ SEG, St Petersburg July, 1995
- SEG, Houston Oct., 1995
- SEG, Denver Nov., 1996
- Mine Warfare Conference, Monterey Nov., 1996
- SEG, Dallas Nov. 1997
- SEG, New Orleans Sept. 1998
- Brazilian Geophysical Soc Aug. 1999
- EAGE, Glasgow June, 2000
- SEG, Calgary August, 2000
- EAGE, Florence June, 2002
- SEG, Salt Lake City October, 2002



### Professional Memberships

- Society of Exploration Geophysicists
- European Association of Exploration Geophysicists

### Supplement - Other Invited Lectures

Amerada-Hess - Tulsa  
 Amoco Research, Production Company (three times) - Tulsa  
 British Petroleum - Houston  
 Brown University - Providence  
 California Institute of Technology - Pasadena  
 CGG - Denver  
 Chevron Oil Company - Brea  
 Chinese Petroleum Company - Taipei

### Supplement - Other Invited Lectures (continued)

City Service Oil Company - Tulsa  
 Courant Institute of Mathematical Sciences - NYU, New York  
 Computing Center, Academia Sinica - Beijing  
 Delft University, Delft, The Netherlands  
 Denver Regional IEEE  
 Exxon Research - Houston  
 Exxon Research - New Jersey  
 GECO of Norway - Stavanger  
 Japan National Oil Company - Tokyo  
 Lawrence Livermore Laboratory  
 Los Alamos Scientific Laboratory  
 Marathon Oil Company - Denver  
 Mobil Oil Company - Dallas  
 MRO Associates - Denver  
 National Bureau of Standards - Boulder  
 National Bureau of Standards - Gaithersburg  
 National Center for Atmospheric Research - Boulder  
 NCAR, NBS, UC, CIRES Joint Colloquium Series - Boulder  
 Naval Research Laboratory - Washington, D. C.  
 Naval Underwater Systems Center - New London  
 Naval Undersea Center - San Diego  
 Northwestern University - Evanston  
 Polytechnic Institute of New York - Farmingdale  
 Quantico Marine Base  
 Rensselaer Polytechnic Institute - Troy  
 Research Institute for Petroleum Exploration and Development(twice) - Beijing  
 Schlumberger-Doll - Ridgefield  
 Southern Methodist University - Dallas  
 Shell Research, The Netherlands  
 Stanford Exploration Project, Stanford University

Statoil of Norway - Stavanger  
Technische Hochschule - Eindhoven  
Tulsa Geophysical Society Regional Meeting  
Tongji University, Shanghai (twice)  
Union Oil Company (twice) - Brea  
University of Arizona - Tucson  
University of Bahia - Salvador, Brazil  
University of Belem - Brazil  
University College - London  
University of California - Los Angeles  
University of Campinas - Brazil  
University of Chicago  
University of Colorado - Boulder  
University of Colorado - Denver  
University of Edinburgh  
University of Essex  
University of Illinois - Chicago Circle  
University of Newcastle-upon-Tyne  
University of New Mexico - Albuquerque  
University of New Orleans  
University of North Carolina - Cullowhee  
University of Novo Friburgo - Brazil  
University of Tel Aviv  
University of Tübingen  
University of Utah - Salt Lake City  
University of Wisconsin - Madison  
University of Wyoming - Laramie  
Weizmann Institute - Rehovot  
Western Geophysical Company - Houston