
Mathematics People

Franklin Institute Awards

In May, the Franklin Institute presented medals to seven individuals whose pioneering work in science, engineering, and education made significant contributions to understanding of the world. In addition to an awards dinner, a series of lectures and symposia highlighted the work of the honorees. Among those receiving awards were three who have made important mathematical contributions.

JOEL L. LEBOWITZ of Rutgers University received the Delmer S. Fahrney Medal "for his dynamic leadership which has advanced the field of statistical mechanics, and for his inspiring humanitarian efforts on behalf of oppressed scientists throughout the world." Lebowitz, the George William Hill Professor of Mathematics and Physics at Rutgers, is not only a renowned mathematician and physicist but also a tireless organizer and editor in statistical mechanics. For over thirty-five years, his famous Informal Conferences on Statistical Mechanics, known as the "Lebowitz Meetings", have attracted top international experts and have been invaluable to young people. Lebowitz is the editor-in-chief of the *Journal of Statistical Physics*. A prolific researcher in equilibrium and nonequilibrium statistical mechanics, Lebowitz, together with Elliott Lieb, proved in 1970 the existence of the thermodynamic limit for Coulomb systems. In recent years, he has contributed to our understanding of nonequilibrium systems. Known for his humanitarian efforts, he has been co-chair of the Committee of Concerned Scientists (CCS) since 1981. The CCS is an independent organization of over 4,000 American scientists founded in 1972 that works on behalf of the human rights of scientists all over the world. The CCS was especially well known for its work with refusenik and dissident scientists in the Soviet Union before the fall of Communism. Lebowitz has been a "stalwart" and a "spark plug" for the organization, says Dorothy Hirsch, executive director of the CCS. "He works for the downtrodden wherever they may be," she remarks. "He is a remarkable person and very sensitive to

anybody in need; where others might slough it off, he is right there."

CHEN NING YANG of the State University of New York at Stony Brook received the Bower Award and Prize for Achievement in Science. This is the first year that this \$250,000 award was given. The citation for the award to Yang reads: "For the formulation of a general field theory which synthesizes the physical laws of nature and provides us with an understanding of the fundamental forces of the universe. As one of the conceptual masterpieces of the twentieth century explaining the interaction of subatomic particles, his theory has profoundly reshaped the development of physics and modern geometry during the last forty years. This theoretical model, already ranked alongside the works of Newton, Maxwell, and Einstein, will surely have a comparable influence on future generations. These scientific contributions combined with his championing of understanding between China and the Western world and his promotion of science education among the youth in all corners of the globe reflect the scientific and humanitarian genius of Franklin himself." Yang is the Albert Einstein Professor and director of the Institute for Theoretical Physics at Stony Brook. He is the codeveloper of the celebrated Yang-Mills theory that has had such a profound effect on mathematics and physics.

GERARD T'HOOFT of the Institute for Theoretical Physics at Utrecht University received the Franklin Medal "for his pivotal role in laying the foundation for a unified field theory of the fundamental forces in nature." It is now generally believed that there are four fundamental forces in nature: the electromagnetic force, the gravitational force, and the weak and strong forces in particle physics. t'Hooft has proven that gauge theories satisfy a crucial constraint required for mathematical consistency and that they provide the proper framework for a unified theory of electromagnetic and weak forces.

The Bower Award for Business Leadership went to JOAN GANZ COONEY, chairman of the Executive Committee and

past president of the Children's Television Workshop, which produced the series "Square One", a program about mathematics for children. This not-for-profit corporation, which she founded in 1968, not only has produced the best educational television seen by children around the world, but through licensing agreements for its beloved characters has maintained a steady source of funding for new children's programming.

The Philadelphia-based Franklin Institute, named in honor of Benjamin Franklin, was founded in 1824 to promote scientific inquiry and to recognize scientific achievement. The Institute's Committee on Science and Arts was founded in 1834 and serves as the Institute's science awards selection committee. Today it considers candidates for nineteen separate medal awards.

—from Franklin Institute news release

National Academy of Science Election

On April 25 the National Academy of Sciences (NAS) announced the election of sixty new members and fifteen foreign associates in recognition of their distinguished and continuing achievements in research. This election brings the number of current NAS members to 1,733. Foreign associates, who number 301, are nonvoting members of the Academy.

Among the new members are seven in the mathematical sciences. Their names, affiliations, and areas of research are:

PERSI DIACONIS, Harvard University, probabilistic number theory, data analysis and the foundations of inference; H. BLAINE LAWSON, State University of New York at Stony Brook, minimal surfaces, Riemannian geometry, foliations, several complex variables, mathematical physics, and algebraic geometry; CHARLES S. PESKIN, Courant Institute of Mathematical Sciences, fluid dynamics, partial differential equations, and applications of mathematics to medicine; CALYAMPUDI R. RAO, Pennsylvania State University, mathematical statistics, estimation theory, differential geometric techniques in statistical inference, and asymptotic tests of hypotheses; RICHARD P. STANLEY, Massachusetts Institute of Technology, algebraic combinatorics, development of unified foundation for combinatorial theory, and interactions between algebra and combinatorics; DANIEL W. STROOCK, Massachusetts Institute of Technology, probability theory and analysis with emphasis on partial differential equations and statistical mechanics; and DAVID J. THOULESS, University of Washington, statistical mechanics, especially the Kosterlitz-Thouless transition for the two-dimensional X-Y model, scaling theory for electrons in random and quasiperiodic potentials and the quantum Hall effect.

Among the foreign associates are three in the mathematical sciences; following are their names, affiliations, and areas of research.

MICHAEL V. BERRY, Bristol University, United Kingdom, theory of quantum chaos concerning semiclassical limits and statistical behavior of eigenvalues;ENNIO DE GIORGI, Scuola Normale Superiore, Pisa, Italy, nonlinear partial differential equations, functions of bounded variation, and area minimizing surfaces; and SRINIVASA S. R. VARADHAN, Courant Institute of Mathematical Sciences, probability theory, partial differential equations, and statistical mechanics.

—Allyn Jackson

Academy of Arts and Science Election

The American Academy of Arts and Sciences has announced the election of 162 new fellows and 21 foreign honorary members. Among these were eight individuals who work in the mathematical sciences. Following are their names, affiliations, and research areas. DAVID BUCHSBAUM, Brandeis University, foundations and applications to commutative ring theory of homological algebra; WENDELL H. FLEMING, Brown University, stochastic control, calculus of variations, stochastic differential equations, population genetics theory; HILLEL FURSTENBERG, Hebrew University of Jerusalem, ergodic theory and topological dynamics; ULF GRENANDER, Brown University, probability, statistics, operations research and insurance mathematics, pattern theory; HENRYK IWANIEC, Rutgers University, number theory, especially sieve theory, automorphic forms, and spectral theory; DUSA McDUFF, State University of New York at Stony Brook, groups of diffeomorphisms especially those preserving symplectic or volume forms, global symplectic geometry, foliations; JOHN NASH, Princeton University, differential geometry, partial differential equations, equilibrium analysis in game theory; and MICHAEL S. WATERMAN, University of Southern California, ergodic theory, probabilistic and computational number theory, mathematical biology, combinatorics and finite mathematics, biological science.

—Allyn Jackson

ONR Young Investigator Awards

Each year the Young Investigator Program of the Office of Naval Research (ONR) makes awards to promising tenure-track faculty who have had their Ph.D.s for five years or less. A Young Investigator Award provides a three-year research grant of \$75,000 per year, plus equipment start-up expenses as appropriate. In most cases, the proposer's institution also pledges to contribute substantial cost-sharing.

Last year ONR received 409 proposals to the program, 100 of them in the mathematical sciences (which includes computer science at ONR). The thirty-three recipients include at least two whose work has a strong mathematical component. The Young Investigator grantees in the mathematical sciences are listed below.

DAVID SALESIN, Computer Science and Engineering Department at the University of Washington, received his doctorate from Stanford University in 1991. He will investigate incremental algorithms based on multi-resolution analysis for the display of complex scientific data.

CAREY PRIEBE, School of Engineering at Johns Hopkins University, received his doctorate from George Mason University in 1993. Pursuing applications of semiparametric statistical analysis to computer imaging, he will set up a computer system to test his theories and processes in semiparametric estimation and statistical pattern recognition.

—Office of Naval Research

Recipients of NSF Mathematical Sciences Postdocs

The Division of Mathematical Sciences of the National Science Foundation (NSF) has announced the names of thirty-eight new doctorates who will receive Mathematical Sciences Postdoctoral Research Fellowships. The program is designed to allow recipients to choose research environments at fellowship institutions that will have maximal impact on their future scientific development.

The stipend of \$66,000 provides support for two 9-month academic years and three 2-month summers. Each awardee may choose to use the fellowship only for doing research or to extend the fellowship by teaching half-time and doing research.

A panel of mathematical scientists, chosen by the AMS, the Institute of Mathematical Statistics, and the Society for Industrial and Applied Mathematics, evaluated the applications to the program. Final selections were made by the NSF.

For each fellowship recipient, the following lists the doctoral institution (in parentheses) and the institution at which the recipient will use the fellowship.

MICHAEL P. BRENNER (University of Chicago), Massachusetts Institute of Technology; JINGYI CHEN (Stanford University), Massachusetts Institute of Technology; TIMOTHY CHOW (Massachusetts Institute of Technology), University of Michigan; NEIL CRISS (University of Chicago), Harvard University; RICARDO CORTEZ (University of California, Berkeley), Courant Institute; JEFFREY DILLER (University of Michigan), Cornell University; ROBERT H. DILLON (University of Utah), Tulane University; GEORGE C. DONOVAN (Georgia Institute of Technology), Princeton University; CHENTEH KENNETH FAN (Massachusetts Institute of Technology), Harvard University; LIMING GE (University of Pennsylvania), Massa-

chusetts Institute of Technology; ROBERT W. GHRIST (Cornell University), University of Texas; YAN GUO (Brown University), Brown University; RICHARD HOLMES (SUNY, Stony Brook), Courant Institute; DMITRY JAKOBSON (Princeton University), California Institute of Technology; DIHUA JIANG (Ohio State University), Yale University; RENLING JIN (University of Wisconsin), Rutgers University; CHRISTOPHER JUDGE (University of Maryland), Johns Hopkins University; DIKRAM KARAGUEUZIAN (Stanford University), University of Wisconsin; JIANG-HUA LU (University of California, Berkeley), University of Arizona; PETER MAGYAR (Harvard University), Northeastern University; ROBERT S. MANNING (Cornell University), University of Maryland; WILLIAM MINICOZZI (Stanford University), Johns Hopkins University; MICHAEL NAKAMAYE (Yale University), Harvard University; KATE OKIKIOLU (University of California, Los Angeles), Massachusetts Institute of Technology; KEN ONO (University of California, Los Angeles), Princeton University; RAHUL PANDHARIPANDE (Harvard University), University of Chicago; JAMES E. POMMERSHEIM (University of Chicago), University of California, Berkeley; SINAI ROBINS (University of California, Los Angeles), University of California, San Diego; JOSEPH M. ROJAS (University of California, Berkeley), Massachusetts Institute of Technology; DANA RON (Hebrew University), Massachusetts Institute of Technology; JENNIFER SCHULTENS (University of California, Santa Barbara), University of California, Berkeley; BROOKE SHIPLEY (Massachusetts Institute of Technology), Notre Dame; DANIEL SPIELMAN (Massachusetts Institute of Technology), University of California, Berkeley; KENNETH D. T-R MCCLAUGHLIN (New York University), Ohio State University; CONSTANTIN TELEMAN (Harvard University), Stanford University; GLENN TESLER (Massachusetts Institute of Technology), University of California, San Diego; THOMAS P. WITELSKI (California Institute of Technology), Massachusetts Institute of Technology; and ABRAHAM J. WYNER (Stanford University), University of California, Berkeley.

For information on how to apply for NSF Mathematical Sciences Postdoctoral Research Fellowships, see the Mathematics Opportunities section of this issue of the *Notices*.

—National Science Foundation

AMS Menger Awards at Science and Engineering Fair

For the eighth time, the AMS has presented the Karl Menger Memorial Awards at the International Science and Engineering Fair (ISEF).

This year's ISEF was held May 7–13, 1995, in Hamilton, Ontario, Canada, with over 1,000 students competing in sixteen different areas of science and engineering. Each of the participating students had already won prizes in local, state, regional, and, in the case of some foreign students, national competitions to get to the ISEF. The AMS judging panel considered fifty-two projects, forty-nine of which were entered in the mathematics category and three with sig-

nificant mathematical content that had been entered in other categories. The panel was extremely impressed by the remarkably high quality of the projects. Many of the projects contain original research of a level usually only expected in graduate students.

In addition to receiving cash prizes, each Karl Menger Award winner was given a personalized certificate, a copy of *What's Happening in the Mathematical Sciences*, and a booklet on Karl Menger.

The winners (listed alphabetically in each category) were: First Place, \$1,000: DAVESH MAULIK, Roslyn High School, Roslyn Heights, New York, "Prime Number Theorem in $F[X]$ ".

Second Place, \$500 each: BENJAMIN MICHAEL GOETZ, Thomas Jefferson School for Science and Technology, Alexandria, Virginia, "Lorenz Braids"; JACOB LURIE, Montgomery Blair High School, Silver Spring, Maryland, "Effective Content of the Theory of Surreal Numbers".

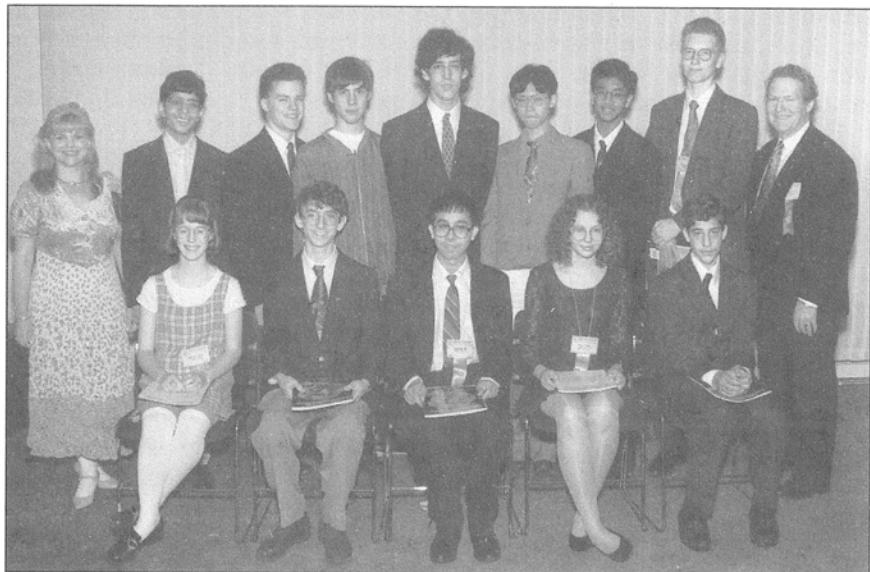
Third Place, \$250 each: DANIEL KALMAN BISS, Bloomington High School, North Bloomington, Indiana, "Symmetry Groups of Perfect Cwatssets"; SAMIT DASGUPTA, Montgomery Blair High School, Silver Spring, Maryland, "Schinzel Hypothesis for Polynomials"; YUEH-HSING LIN, Taichung First Senior High School, Taipei, Taiwan, "On the Sum $E^N K^m$ and Bernoulli Numbers"; and CLAUS MAZANTI SOERENSEN, Skanderborg Amtsgymnasium, Skanderborg, Denmark, "Contributions to the Analytic Theory of Continued Fractions".

Honorable Mention: THEODORE HAW-YUN HWA, Suncoast High Community School, Riviera Beach, Florida, "Postage Stamp Problem: Two-Year Study"; SAMUEL JACOB KLEIN, JR., Bellaire Senior High School, Bellaire, Texas, "Binary Expansions of Multiples of Primes"; KATHERINE ANNE PAUR, North Carolina School of Science and Mathematics, Durham, North Carolina, "Geometric and Graph Theoretic Properties of Rigidity"; BRIDGET HELEN PENNY, Cedar City High School, Cedar City, Utah, "Patterns in Trisectioned Triangles"; and SCOTT NICHOLAS SANDERS, Ely High School, Pompano Beach, Florida, "Fuzzy Set Theory: Walsh and Fourier Transforms in Image Enhancement".

Especially noteworthy is the fact that Maulik, who has just completed his sophomore year, was also the first-place winner last year.

Ten mathematicians were selected to serve on the AMS panel: George A. Elliott, The Fields Institute; Gisèle Ruiz Goldstein (chair), Louisiana State University; Kenneth D. Magill, Jr., SUNY Buffalo; Saras Magill, Daemen College; Donald H. Pelletier, York University; M. Ann Piech, SUNY Buffalo; Jack R. Quine, Florida State University; Peter Rosenthal, University of Toronto; Victor P. Snaith, McMaster University; and Gail S.K. Wolkowicz, McMaster University.

In addition, the AMS Menger Committee, which was formed in 1994, attended the ISEF: Bettye Anne Case, Florida State University; Jerome A. Goldstein, Louisiana



AMS Menger Awards

Back row, left to right: G. Goldstein (AMS panel), D. Maulik, B. Goetz, J. Lurie, D. Biss, Y. H. Lin, S. Dasgupta, C. Soerensen, J. Goldstein (AMS Menger Committee).

Front row, left to right: B. Penny, S. Klein, Jr., T. Hwa, K. Pauer, S. Sanders.

State University; and Julian Palmore (chair), University of Illinois.

The Society's participation in the ISEF is supported in part by income from the Karl Menger Fund, which was established by the family of the late Karl Menger. For more information about this program, contact Timothy Goggins, AMS Development Officer; e-mail tjg@math.ams.org, telephone 401-455-4110.

—Gisèle Ruiz Goldstein
Louisiana State University

U.S. Mathematical Olympiad Winners

The MAA has announced the eight top-scoring students in the 24th annual USA Mathematical Olympiad. The three-stage competition involved nearly 550,000 students and took place over three months.

The top-scoring students were honored on June 12 at an awards ceremony at the National Academy of Sciences in Washington, DC. Six of them have been chosen as members of the U.S. team that will compete in the International Mathematical Olympiad (IMO), to be held in July in Toronto. Prior to the IMO, the eight top scorers, together with another sixteen students who did well on the Olympiad, will participate in an intensive, four-week training session at the Illinois Academy of Mathematics and Science in Aurora, Illinois.

The top winner is ALEKSANDR KHAZANOV, a senior at Stuyvesant High School in New York. Last summer he was

a member of the U.S. team that won the IMO with a perfect score, the first in IMO history. Khazanov will enter Pennsylvania State University in the fall to study mathematics, and he plans to be a mathematics professor.

The other U.S. team members are: CHRISTOPHER CHANG, a junior at Henry M. Gunn High School in Palo Alto, California; JAY CHYUNG, a senior at West High School in Iowa City; ANDREI GNEPP, a senior at the Hawken School in Gates Mills, Ohio; JACOB LURIE, a junior at Montgomery Blair High School in Silver Spring, Maryland; and JOSH NICHOLS-BARRER, a sophomore at Newton South High School in Newton Centre, Massachusetts. This is the second consecutive year that Chang and Lurie were Olympiad winners. In addition, Lurie was on last year's Olympiad team.

The two team alternates are SAMIT DASGUPTA, a senior at Montgomery Blair High School in Silver Spring, Maryland, and CRAIG R. HELFGOTT, a senior at Ramaz Upper School in New York City.

—from MAA news release

AWM Schafer Prize Awarded

RUTH BRITTO-PACUMIO, a junior at the Massachusetts Institute of Technology, is the winner of the sixth annual Alice T. Schafer Prize.

The \$1,000 prize is awarded to an undergraduate woman in recognition of excellence in mathematics and is sponsored by the Association for Women in Mathematics (AWM).

Britto-Pacumio has already completed the requirements for a mathematics major with no grade below an A in any subject. One faculty member writes, "Ruth is a truly outstanding student... She was the top student, in very tough competition, in my algebra course. This year she continues to excel in graduate courses." Another faculty member comments, "Every few years an individual dominates a class here at MIT. In the class of 1996 this is occurring, [and it is] Ruth Britto-Pacumio. She seems to know everything and be everywhere." She was a participant in a 1994 Research Experiences for Undergraduates (REU) program at the University of Minnesota-Duluth where she worked



Ruth Britto-Pacumio

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in graph theory. Her performance in the program was described as "truly extraordinary". This year she won the Elizabeth Lowell Putnam Prize for her excellence in the Putnam Competition.

Three runners-up, who receive \$150 each, were also chosen. WUNG-KUM FONG, a junior at the University of California, Berkeley, has completed several undergraduate honors courses with flying colors and is now taking graduate courses and reading courses, in which she is also excelling. She is described as an "exceptional student" and "stronger than many graduate students" at Berkeley. In 1994 she participated in the Mills College/MSRI Summer Program. NANCY HEINSCHEL, a senior at the University of California, Davis, has taken an array of advanced mathematics courses at Davis while maintaining a 3.99 grade point average. She participated in an REU program at Oregon State University last summer, where she worked on stability of population models. She serves as president of both the UC Davis mathematics club and the UC Davis chapter of the Pi Mu Epsilon honor society. In the fall she will begin graduate studies in mathematics at Stanford University. JESSICA WACHTER, a junior at Harvard University, performed outstandingly in undergraduate courses and is now taking graduate courses. In the summer of 1994 she participated in an REU program at the University of Minnesota-Duluth where she worked in graph theory. She has also worked as a teaching assistant at a summer program for mathematically talented high school students. One faculty member described Wachter as "very talented, very mature, and strongly motivated."

TARA E. BRENDLE of Haverford College and KAREN SHUMAN of Agnes Scott College were named Honorable Mentions. Brendle, who will enter graduate school in mathematics in the fall, began research in knot theory at a 1994 summer REU program at the University of Tennessee, Knoxville, and has written an impressive senior thesis on the subject. Her undergraduate thesis advisor writes, "The quality of her performance in my course, her level of interest in mathematics, and her ability for independent work are all among the highest I have seen." Shuman has taken a full range of mathematics courses, consistently earning top scores and straight As. She also participated in an REU program in the summer of 1994, at the College of William and Mary, where she worked in linear algebra. She is described by one of her professors as "unusually talented and creative...disciplined and conscientious... simply outshining every other student."

Presentation of the prizes will be held on August 5, 1995, at the Mathfest in Burlington, Vermont. The Alice T. Schafer Prize is funded by an endowment with continuing contributions. For further information on the prize, contact: AWM, 4114 Computer and Space Sciences Building, University of Maryland, College Park, MD 20742-2461; telephone 301-405-7892; e-mail awm@math.umd.edu.

—from AWM News Release

Deaths

ERNEST E. BLANCHE of Rockville, MD, died in November 1993. Born in October 1912, he was a member of the Society for 52 years.

EDMUND CHURCHILL of Yellow Springs, OH, died on March 24, 1995. Born on November 10, 1912, he was a member of the Society for 51 years.

ROBERT A. EUBANKS of Urbana, IL, died on September 13, 1994. Born on June 3, 1926, he was a member of the Society for 44 years.

MYRON GOLDSTEIN of Fresno, CA, died on November 17, 1994. Born on July 5, 1935, he was a member of the Society for 28 years.

ROBERT E. GREENWOOD, Professor Emeritus of the University of Texas at Austin, died on April 25, 1993. Born on June 21, 1911, he was a member of the Society for 54 years.

FRANK A. GUGINO of Tonawanda, NY, died on May 15, 1995. Born on October 23, 1904, he was a member of the Society for 6 years.

PAUL HOROWICZ, of the University of Rochester, Rochester, NY, died on April 20, 1995. Born on June 17, 1931, he was a member of the Society for 3 years.

CHESTER F. LUTHER, Professor Emeritus of Willamette University, Salem, OR, died on November 29, 1994. Born in October 1906, he was a member of the Society for 64 years.

WILLIAM C. NEMITZ of Farmington Hills, MI, died on October 3, 1994. Born on July 27, 1928, he was a member of the Society for 36 years.

JAMES G. RENNO of Tucson, AZ, died on April 19, 1995. Born on October 16, 1922, he was a member of the Society for 48 years.

BERNARD A. SOBEL of Baton Rouge, LA, died on April 15, 1995. Born on January 24, 1917, he was a member of the Society for 40 years.

ALBERT W. TUCKER, Professor Emeritus of Princeton University, died on January 25, 1995. Born on November 28, 1905, he was a member of the Society for 64 years.



American Mathematical Society Linear Infinite- Particle Operators V.A. Malyshev & R.A. Minlos

The main subject of this book can be viewed in various ways. From the standpoint of functional analysis, it studies spectral properties of a certain class of linear operators; from the view point of probability theory, it is concerned with the analysis of singular Markov processes; and, from the vantage point of mathematical physics, it analyzes the dynamics of equilibrium systems in quantum statistical mechanics and quantum field theory. Malyshev and Minlos describe two new approaches to the subject which have not been previously treated in monograph form. They also present background material which makes the book accessible and useful to researchers and graduate students working in functional analysis, probability theory, and mathematical physics.

Translations of Mathematical Monographs, Volume 143
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Nontraditional Methods in Mathematical Hydrodynamics O.V. Troshkin

This book discusses a number of qualitative features of mathematical models of incompressible fluids. Three basic systems of hydrodynamical equations are considered: the system of stationary Euler equations for flows of an ideal (nonviscous) fluid, and Reynolds equations for flows of a viscous fluid, pressure, and pair one-point velocity correlations of turbulent flows. The analysis concerns algebraic or geometric properties of vector fields generated by these equations, such as the general arrangement of streamlines, the character and distribution of singular points, conditions for their absence or appearance, and so on. Troshkin carries out a systematic application of the analysis to investigate conditions for unique solvability of a number of problems for these quasilinear systems. Containing many examples of particular phenomena illustrating the general ideas covered, this book will be of interest to researchers and graduate students working in mathematical physics and hydrodynamics.

Translations of Mathematical Monographs, Volume 144
March 1995, 197 pp. (hardcover). ISBN 0-8218-0285-2.

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