



David Pines CV

David Pines is the Founding Director and CEO of the Institute for Complex Adaptive Matter (a Multicampus Research Program of the University of California), Research Professor of Physics and Professor Emeritus of Physics and Electrical and Computer Engineering in the Center for Advanced Study, University of Illinois at Urbana-Champaign, and a staff member in the office of the Materials Science and Technology Division at Los Alamos. His seminal contributions to the theory of many-body systems and to theoretical astrophysics have been recognized by two Guggenheim Fellowships, the Feenberg Medal, Friemann, Dirac, and Drucker Prizes, and by his election to the National Academy of Sciences, American Philosophical Society, American Academy of Arts and Sciences, Russian Academy of Sciences, and Hungarian Academy of Sciences and Visiting Professorships at Caltech, College de France, Trinity College, University of Cambridge, University of Leiden, and Universite de Paris.

He is the Founding Director of the Center for Advanced Study, UIUC (1968-70), was Vice-President of the Aspen Center for Physics from 1968-1972, founder and Co-chair of the US-USSR Cooperative Program in Physics, 1968-89; and a Co-founder, Vice-President, Chair of the Board of Trustees and Co-Chair of the Science Board the Santa Fe Institute, during the years 1982-96. He has been the organizer or co-organizer of fifteen workshops and two summer schools of theoretical physics, is currently an Honorary Trustee and Honorary Member of the Aspen Center for Physics, a member of the Science Board of the Santa Fe Institute, and of the Board of Overseers, Sabanci University, Istanbul.

He has accepted an appointment as Professor of Physics at UC Davis, with the understanding that he will be in residence for the winter quarter, beginning in January, 2006

CAREER HISTORY

A.B. University of California (Berkeley) 1944

M.A. Princeton University 1948

Ph.D. Princeton University 1950

Instructor, University of Pennsylvania, Philadelphia 1950-52

Res. Asst. Professor, University of Illinois at U-C 1952-55

Assistant Professor, Princeton University 1955-58

Member, Institute for Advanced Study, Princeton 1958-59

Professor of Physics & Electrical Engineering, UIUC 1959-1995

Professeur Associe, Faculte des Sciences, Universite de Paris 1962-63

Founding Director, Center for Advanced Study, UIUC 1967-70

Visiting Professor, NORDITA 1970

Visiting Scientist, Academy of Sciences, USSR 1970
and 1978
Visiting Scientist, Academy of Sciences, PRC 1973
Exchange Professor, Univ. de Paris 1978
Professor, Center for Advanced Study, UIUC 1978-1990
Visiting Scientist, Hungarian Academy of Sciences 1979
Gordon Godfrey Professor (University of New South
Wales) 1985
B. T. Matthias Visiting Scholar (Los Alamos National Lab) 1986
Professor, College de France 1989
Center for Advanced Study Professor of Physics and
Electrical Computer Engineering, UIUC 1990-1995
External Professor, Santa Fe Institute 1989-2002
Robert Maxwell Professor, Santa Fe Institute 1991
S. Ulam Visiting Scholar (Los Alamos National Laboratory) 1996-97
Visiting Professor, Royal Institute of Technology, Stockholm, 1998
Visiting Fellow-Commoner, Trinity College, University of Cambridge 2000

HONORS

Member, National Academy of Sciences
Member, American Philosophical Society
Fellow, American Academy of Arts and Sciences
Foreign Member, Russian Academy of Sciences
Honorary Member, Hungarian Academy of Sciences
Fellow, American Association for Advancement of Science
Fellow, American Physical Society

AWARDS

National Science Foundation Senior Postdoctoral Fellow in Copenhagen and Paris 1957-58
John Simon Guggenheim Memorial Fellow 1962-63 and 1970-71
Lorentz Professor, University of Leiden 1971
Fritz London Memorial Lecturer (Duke Univ.) 1972
Guilio Racah Memorial Lecturer (Hebrew Univ.) 1974
Marchon Lecturer (Univ. of Newcastle-upon-Tyne) 1976
Sherman Fairchild Distinguished Scholar (Caltech) 1977
Eugene Feenberg Memorial Lecturer (Washington U) 1982
Eastman Kodak - Univ. of Rochester Distinguished Lecturer 1983
Friemann Prize in Condensed Matter Physics 1983
Dirac Medal for the Advancement of Theoretical Physics 1985
Emil Warburg Lecturer (Univ. of Bayreuth) 1985
Eugene Feenberg Medal 1985
Daniel C. Drucker Eminent Faculty Award 1994

EDITORIAL CONTRIBUTIONS

Founding Editor, Frontiers in Physics, 1961-present
Editor, Reviews of Modern Physics 1973-96
Editor/Co-Editor of five books

EDUCATIONAL and PUBLIC SERVICE

Co-Founder of the Center for Advanced Study, UIUC, 1967; the Aspen Center for Physics, 1967-69; the US-USSR Cooperative Program in Physics, 1968; the Santa Fe Institute, 1982-84; and the Institute for Complex Adaptive Matter, 1998-1999.

Organizer or co-organizer of fifteen workshops and two summer schools of theoretical physics

Aspen Center for Physics: Vice-President, 1968-72;
Board of Trustees 1968-80; Honorary Trustee, 1980-; Member, 1980-

Santa Fe Institute: Co-Founder, 1984; Vice-President, 1984-86; Board of Trustees, 1984-2002; Chair, Board of Trustees, 1986-87; Founding Co-Chair, Science Board, 1987-96; Member, Science Board, 1987-1999; 2001-; External Faculty 1995-

Institute for Complex Adaptive Matter: Founding Director and Member of Board of Trustees (now Board of Governors) and Science Steering Committee, 1999-present

National Academy of Sciences; Chair, Panel on Condensed Matter Physics, 1994-98

National Academy of Sciences/National Research Council:
Physics Survey Committee, 1965-66;
Board on International Scientific Exchange, Founder and Chair, 1973-1977
US/USSR Workshops in Condensed Matter Theory, Founder and Co-Chair, 1968; 1970; 1974; 1978; 1988
US/USSR Commission on Cooperation in Physics, Founder and Co-Chair, 1975-80

American Academy of Arts and Sciences: Chair, Physics Section and Class Membership Committee, 1996-99

Los Alamos National Laboratory:
T Division Advisory Committee: Member 1975-82; Chair, 1977-1982

Institute for Defense Analyses, Mentor, Defense Sciences Study Group, 1985-2000

RESEARCH INTERESTS:

His current research focuses on the search for the organizing principles responsible for emergent behavior in matter, with particular attention to correlated matter, the study of materials in which unexpectedly new classes of behavior emerge in response to the strong and competing interactions among their elementary constituents. As the PI on a Los Alamos Directed Research Project on Emergent Behavior in Correlated Electron Superconductors, with his postdocs and collaborators he explored ways in which one can get superconductivity without phonons, and the use of the spin-fermion model to examine the role played by magnetic quasiparticle interactions in bringing about superconductivity, pseudogap and quantum critical behavior in the cuprate, heavy electron, and organic superconductors. He is currently working on a two-fluid description of the emergent behavior found in the pseudogap state of underdoped cuprate superconductors and

in the Kondo lattice. He continues his interest in the superfluidity of neutron stars as revealed by pulsar glitches, and in the origin of, and interactions between, elementary excitations in the helium liquids.

SOME RECENT SCIENTIFIC ARTICLES

*D. Pines, Pseudogap Behavior in Underdoped Cuprates, Proceedings of the University of Miami Symposium on Emerging Theories of Superconductivity, Kluwer Pub. in the press (2004), cond-mat 0404513

*N. Curro, B-L. Young, J. Schmalian, and D. Pines, Scaling in the Emergent Behavior of Heavy Electron Materials, Phys.Rev.B. in the press, Cond-Mat 0402179

*S. Nakatsuji, D. Pines, and Z. Fisk, Two Fluid Description of the Kondo ,Lattice, Phys Rev. Lett. 92,016401, 2004

*N. Curro et al, Low Frequency Spin Dynamics in the CeMn5 Materials, Phys, Rev. Lett.90,227202, 2003

*A. Chubukov, D. Pines, and J. Schmalian, A Spin Fluctuation Model for d-wave Superconductors, in "The Physics of Conventional and Unconventional Superconductors", ed. K.H. Benneman and J. B. Ketterson, Springer Pub, 2003 (cond-mat/0201140)

*R.B.Laughlin,G. Lonzarich, P.Monthoux, and D. Pines, The Quantum Criticality Conundrum, Advances in Physics 50, 361-365, 2001

*R. B.Laughlin, D.Pines, B.Stojkovic, J. Schmalian, P.Wolynes, The Middle Way, PNAS 97,32-37, 2000

*R.B.Laughlin and D. Pines, The Theory of Everything, PNAS 97, 27-32 (2000)

*D. Pines, The Spin Fluctuation Model for High Temperature Superconductivity: Progress and Prospects. In The Gap Symmetry and Fluctuations in High Tc Superconductors, eds.J. Bok, G.Deutscher, D. Pavuna, S. Wolf, Plenum, pp. 111-142. (1998).

BOOKS

The Many-Body Problem (WA Benjamin, 1961)

Elementary Excitations in Solids (WA Benjamin, 1963)

Theory of Quantum Liquids (with P. Nozieres), Vol 1, (WA Benjamin, 1966); Vol 2. (Addison-Wesley), 1987

Links & networks to academic and business institutions

Location of current Pines collaborators:

Cambridge University

Edinburgh University

Kyoto University

McMaster University

Sabanci University
University of California at Davis
University of California at San Diego
University of Illinois at Urbana-Champaign
Iowa State University
Stanford University
University of Tennessee at Knoxville
University of Wisconsin at Madison
Argonne National Laboratory
Ames National Laboratory
Los Alamos National Laboratory

ICAM branch members:

33 ICAM BRANCHES, 3 AFFILIATES, REPRESENTING 53 INSTITUTIONS

CURRENT BRANCH MEMBERS

LOS ALAMOS NATIONAL LABORATORY-Lead branch

BOSTON COLLEGE
BOSTON UNIVERSITY
UC DAVIS
UC IRVINE
UC RIVERSIDE
UC SAN DIEGO
UC SANTA BARBARA
CAMBRIDGE UNIVERSITY
UNIVERSITY OF CHICAGO
CORNELL UNIVERSITY
FLORIDA STATE UNIVERSITY
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
INTERNATIONAL CENTER FOR THEORETICAL PHYSICS
ISRAELI CONSORTIUM (HEBREW U., TEL-AVIV U., WEIZMANN)
IOWA STATE UNIVERSITY
KENT STATE UNIVERSITY
KYOTO UNIVERSITY (CAEA)
KARLSRUHE CONSORTIUM (4 Institutions)
LOUISIANA CONSORTIUM (TULANE, LSU)
LAWRENCE LIVERMORE NATIONAL LABORATORY
LEIBNIZ INSTITUTE FOR SOLID STATE AND MATERIALS RESEARCH
MAX PLANCK INSTITUTE CONSORTIUM (6 MPI BRANCHES)
NEW YORK UNIVERSITY
PARIS CONSORTIUM (6 Institutions)
PENNSYLVANIA STATE UNIVERSITY
PRINCETON UNIVERSITY
RUTGERS UNIVERSITY

SABANCI UNIVERSITY
SANDIA NATIONAL LABORATORY
UNIVERSITY OF TOKYO (ISSP)
WASHINGTON UNIVERSITY
UNIVERSITY OF ZURICH

ICAM AFFILIATES

EPFL-LAUSANNE
INTERNATIONAL SCHOOL OF PHYSICS-ERICE
SCOTTISH UNIVERSITY CONSORTIUM (Edinburgh, St. Andrews)

29 INSTITUTIONS CONSIDERING BRANCH MEMBERSHIP

UCSC
UCLA
UCSF
UC BERKELEY
LAWRENCE BERKELEY NATIONAL LABORATORY
*ARGONNE NATIONAL LABORATORY
BANGALORE CONSORTIUM
*BRAZILIAN CONSORTIUM
BROWN
CARNEGIE-MELLON
CENTRE FOR NANOTECHNOLOGY (U. LONDON)
UNIVERSITY OF COLOGNE
DUKE
FLORIDA
HARVARD
*LAUSANNE
*LEIPZIG UNIVERSITY
*MICHIGAN
MINNESOTA
*NEST (PISA)
*NORTHWESTERN
OAK RIDGE NATIONAL LABORATORY
OHIO STATE
PENNSYLVANIA
OSAKA UNIVERSITY
QUEENSLAND UNIVERSITY
RICE
*RPI
YALE

*FACULTY/STAFF MEMBERS ANTICIPATE MEMBERSHIP WITHIN COMING
ACADEMIC YEAR