September 2005

DR. JAY PAUL BORIS

Chief Scientist and Director: Laboratory for Computational Physics and Fluid Dynamics
Naval Research Laboratory Chair of Science in Computational Physics (1978 - Present)

Work Address: Code 6400, U.S. Naval Research Laboratory, Washington, D.C. 20375
phone: 202-767-3055 fax: 202-767-6260 email: boris@lcp.nrl.navy.mil

Education:

Ph.D. Astrophysical Sciences, 1968, Princeton University
M.A. Astrophysical Sciences, 1966, Princeton University
B.A. Physics, 1964, Princeton University

Professional Interests:

Fluid dynamics including turbulence and reactive flows
Detailed simulation and operational modeling of urban airflow for emergency response
Computational physics and numerical analysis
Nonlinear plasma dynamics and inertial confinement fusion
High-performance computing technology
Large-scale simulation using these capabilities for civilian and military applications

Current Position:

As Chief Scientist and Director, Dr. Boris is responsible for developing, supervising, and leading the theoretical and computational research of the Laboratory for Computational Physics and Fluid Dynamics (LCP&FD), an interdisciplinary division of engineers, physicists and applied mathematicians at the U.S. Naval Research Laboratory. Current projects in the LCP&FD include applications of high performance computing to aerodynamics, fluid dynamics, reactive flow, micro-electro-mechanical systems (MEMS) and micro-fluidics, laser-plasma interactions, solar physics, astrophysics, and force protection for urban defense against weapons of mass destruction. Dr. Boris' personal expertise spans these topics and also includes research in turbulence, atmospheric sciences, plasma dynamics, nuclear weapons effects, inertial confinement fusion, manybody dynamics, and numerous aspects of high performance computing.

For seven years, Jay Boris served as the DoD Computational Technology Area Leader for Computatonal Fluid Dynamics (CFD), participating in the initiation and execution of the scalable software development program. The current focus of his personal research has been the development of fast and accurate methods for turbulent, reactive airflow prediction for Homeland Security and force protection in urban areas. Dr. Boris has served on external review panels for the National Academy of Sciences and a number of U.S. Agencies and Laboratories. He is currently serving on an international review panel for FOI, the R&D agency of the Swedish Department of Defense.

Jay is a United States citizen born May 25, 1942 in Buffalo, New York.

Previous Positions:

Head, Plasma Dynamics Branch, NRL Plasma Physics Division, 1976–1978
Division Consultant, Computational Physics, NRL Plasma Physics Division, 1970–1976
Research Physicist, Princeton Plasma Physics Laboratory, 1968–1970

Professional Awards and Recognition:

U.S. Senior Executive Service (SES), Level 4
American Institute for Aeronautics and Astronautics – 2005 Fluid Dynamics Prize
Exceptional Service Award, DoD High Performance Computing Modernization Office, 2001
Fellow, American Institute for Aeronautics and Astronautics, 1993
U.S. Navy Captain Robert Dexter Conrad Award for Scientific Achievement, 1990

Presidential Rank of Meritorious Executive in the Senior Executive Service, 1988
U.S. Navy Award for Distinguished Achievement in Science, 1980
Washington Academy of Sciences Award in Mathematics and Computer Sciences, 1979
Naval Research Laboratory Chair of Science in Computational Physics, 1978
Arthur S. Fleming Award – One of the Top 10 Civil Servants in Science, 1976
Fellow, American Physical Society, Plasma Physics, 1976
U.S. Navy Superior Civilian Service Award, 1975
U.S. Civil Service Outstanding Performance Ratings, 1973, 1976, 1977, 1978
NRL Publication Awards, 1972, 1973, 1977, 1979–1982, 1987, 1990
Princeton University Graduate Fellowship, 1964 – 1968
National Science Foundation Fellowship in Astrophysics, 1965 – 1967
Princeton University Kusaka Memorial Physics Prize, 1964
Graduated Magna Cum Laude from Princeton University, 1964
First Princeton University Scholar, 1961 – 1964
Phi Beta Kappa, Princeton University, 1963

Selected Professional Committees and Panels:

Computational Technology Area Leader for CFD, DoD High-Performance Computing Modernization Program, 1993–2000
OSD CBW Model Development Integrated Product Team, 1999-2000
New Technologies Subcommittee and Internet Working Group, AIAA, 1999-2001
Chair, APS Computational Physics Division Rahman Prize Committee, 1992 – 1994
Program Subcommittee, 25th International Symposium on Combustion, 1993 – 1994
NRL E.O. Hulburt Prize Committee, 1992–1995, Chair 1993
AIAA Fluid Dynamics Technical Committee, 1990–1993
NAE/NRC Panel to Review NASA Ames CFD Program, 1993
Executive Committee, APS Computational Physics Division, 1987–1992 (Chair 1990–1991)
External Advisory Panel, DARPA Fluid Dynamics URI Programs, 1986–1992
Steering Committee, International Conference on Computational Physics, 1990–1991
Panal for NBS Computing, National Research Council, 1986–1989
NAS/NRC Panel to Assess Current Capabilities & Future Directions in CFD, 1986–1987
ONR Committee to Review the DTNSRDC General Hydrodynamics Research Program and the Applied Hydrodynamics Program, 1987–1988
NAS/NRC Panel to Review the NASA Numerical Aerodynamic Simulator, 1985–1986
Program Subcommittee, 22nd International Symposium on Combustion, 1986–1987
Executive Committee, APS Plasma Physics Division, 1981–1983
Member of Dissertation Committees and Adjunct Faculty Advisor at Princeton University, University of Maryland, and Duke University, 1972–1997
Corresponding Editor, Comments on Plasma Physics and Controlled Fusion, 1972–1980

Current Membership in Professional Associations:

American Institute of Aeronautics and Astronautics
The Combustion Institute
American Physical Society – Fluid Dynamics, Plasma Physics and Computational Physics
Washington Academy of Sciences

Publications: Dr. Boris has published approximately 400 papers and journal articles including three books and over a dozen book chapters and invited review articles. He has given over 100 invited or keynote presentations at professional society meetings and conferences. He co-authored *Numerical Simulation of Reactive Flow*, the first book on the applications of numerical methods to reactive flows, published by Elsevier, 1987; second edition published by Cambridge University Press, 2001. (Russian translation, 1991, published by Mir in the former Soviet Union.)