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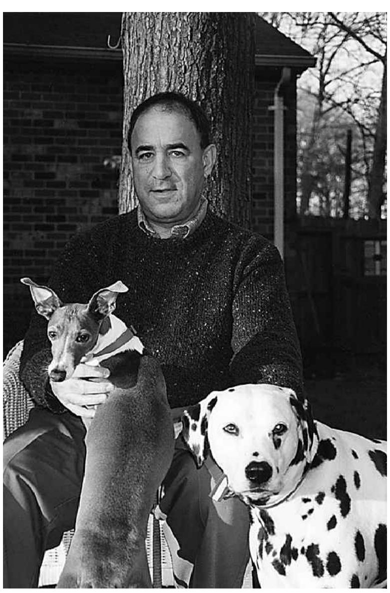
Journal Support

THIS issue is one where, as Editor-in-Chief, I can use a small space to acknowledge all of the important contributors to this journal and thank them. The contributors are all of the authors, reviewers, Associate Editors, AIAA Editorial Staff, and TechBooks staff who have been associated with the *Journal of Spacecraft and Rockets* (*JSR*).

I first want to thank the authors who have chosen the *JSR* as the means to disseminate their research to the technical aerospace community. I hope that they felt that the peer review process was professional and constructive. The peer review process and the high quality of the AIAA journals would not exist if it were not for the reviewers who voluntarily give of their time and provide in-depth reviews. Although it is only a small token of appreciation, their names are listed in this issue. The associate editors provide the cornerstone of this peer review process. They have the responsibility for the technical evaluation of the proposed articles and for maintaining the high quality in the published version. Their biographies are also included in this issue. Unfortunately, I have to say "so long" to Dick Wilmoth, Hugh McManus, James Maus, and Fred Lutze. They told me that they had received all the "fame, fortune, and reward" that they could handle. It has been a real pleasure to be associated with such dedicated, conscientious individuals. *JSR* can only be better off as a result of their association with it. We are fortunate to have commitments from Mark Miller, Greg Molvik, Mike Nemeth, David Spencer, and Jeff Taylor to be new *JSR* Associate Editors. Finally, we arrive at the AIAA Editorial Staff and the TechBooks staff. I first want to extend thanks to Mary Ellen Lanham, who recently left AIAA, for all of her hard work. I want to thank Carol Neff and her TechBooks staff for their patience and outstanding effort in publishing the special issues and sections. Especially, I want to thank Norma Brennan for her terrific help over all of the past years. Her ongoing dedication is very much appreciated.

E. Vincent Zoby
Editor-in-Chief



E. VINCENT ZOBY is employed by NASA and has been at the Langley Research Center since 1962. He received a B.S.M.E. from Virginia Polytechnic Institute and State University and an M.S. in thermal engineering from Old Dominion University. Mr. Zoby has been responsible for developing and demonstrating the applicability of approximate codes that define the aerothermal environment about spacecraft at both Earth and planetary entry conditions. This work encompassed preliminary design and/or postflight heating calculations for the RAM C, Re-Entry F, Shuttle, and Venusian and Galileo vehicles. (His dogs, Banks and Hokie, have not done a lick of work in their life!) Mr. Zoby has over 70 publications in the area of hypersonic aerothermodynamics to his credit, including studies for computing the equilibrium high-temperature properties of gas mixtures and for the heat shield performance of entry probes. He is currently involved in studies of a Reusable Launch System. Mr. Zoby served on the AIAA Thermophysics Technical Committee and is a Fellow of the AIAA.

Associate Editors

IAIN D. BOYD received a B.S. in mathematics (1985) and a Ph.D. in aeronautics and astronautics (1988) from the University of Southampton in England. He worked for four years as a contractor at NASA Ames Research Center in the area of rarefied gas dynamics. Dr. Boyd was a faculty member in Mechanical and Aerospace Engineering at Cornell University for six years and recently joined the Department of Aerospace Engineering at the University of Michigan. His research interests involve development of physical models and numerical algorithms using particle methods with applications to a variety of nonequilibrium gas and plasma dynamic systems. He has authored over 60 journal articles. He is the recipient of the 1998 AIAA Lawrence Sperry Award and the 1997 AIAA Electric Propulsion Best Paper Award.

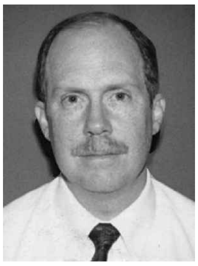
RUSSELL M. CUMMINGS graduated from California Polytechnic State University with a B.S. and M.S. in aeronautical engineering in 1977 and 1985, respectively, before receiving his Ph.D. in aerospace engineering from the University of Southern California in 1988. Before joining the Aeronautical Engineering Department at Cal Poly in 1986, he worked for Hughes Aircraft Company in the Missile Systems Group as a missile aerodynamicist from 1979 through 1986. He completed a National Research Council postdoctoral research fellowship at NASA Ames Research Center in 1990, working on the computation of high-angle-of-attack flowfields in the Applied Computational Fluids Branch. He was named an AIAA Associate Fellow in 1990, received the AIAA National Faculty Advisor Award in 1995, and has served on the AIAA Student Activities Committee since 1990. Dr. Cummings served as the Chairman of the Aeronautical Engineering Department at Cal Poly from 1991 through 1995 and is currently a Professor in that department.

CRAIG A. KLUEVER received his B.S. in aerospace engineering from Iowa State University in 1986. He worked at Rockwell International from 1986 to 1989 in the Space Shuttle Guidance, Navigation, and Control Group. He returned to Iowa State and completed his M.S. and Ph.D. degrees in aerospace engineering in 1990 and 1993, respectively. Since 1993, he has been with the University of Missouri–Columbia and is currently an Associate Professor in the Mechanical and Aerospace Engineering Department. His research interests include mission analysis and design, spacecraft system and trajectory optimization for electric propulsion vehicles, and orbital mechanics. He is a Senior Member of AIAA and a member of the AIAA Astrodynamics Technical Committee.

TONY C. LIN received his B.S. degree (1964) from National Taiwan University in civil engineering and his Ph.D. degree (1969) from Polytechnic Institute of Brooklyn in aerospace engineering. Over the years, he has worked at NASA Marshall Space Flight Center, Avco, and The Aerospace Corp. Since 1979, he has been with TRW/SSD and is currently a department manager. His primary fields of interest are aerothermodynamics, flight mechanics, computational fluid dynamics, and electromagnetic wave propagation.

RAMESH B. MALLA is an Associate Professor and Associate Head of Department of Civil and Environmental Engineering at the University of Connecticut. He received his B.S. in civil engineering (1979) from the Indian Institute of Technology, his M.S. in civil engineering (1981) from the University of Delaware and his Ph.D. in structural mechanics (1986) from the University of Massachusetts–Amherst. His teaching and research expertise is in the areas of structural mechanics, with special concentration on dynamics and vibrations of structures. His research encompasses dynamic and thermal response of orbital structures, response of lunar structures, passive damping of structures, dynamic effects of member failure in truss-type structures, and structural monitoring using fiber-optic sensors. Several federal and state agencies and industry have sponsored his research projects. Professor Malla played a key role in the founding of the Connecticut Space Grant College Consortium and has been serving as the University of Connecticut Director since its inception in 1991. He also has more than 45 technical publications, has served on several technical and planning committees, and is a member of the American Society of civil Engineers, the American Society of Mechanical Engineers, the AAM, and the AIAA. He is serving on the Executive Committee of the ASCE Aerospace Division and is on the Editorial Board of the ASCE *Journal of Aerospace Engineering* and the *International Journal of Space Structures*.

JAMES A. MARTIN holds degrees from West Virginia University, the Massachusetts Institute of Technology, and George Washington University. He has worked at the NASA Langley Research Center, the University of Alabama, and Boeing. His work has involved the design and evaluation of reusable launch vehicles. His most recent work has been on the NASA and Boeing Future-X Program.

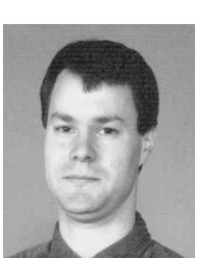


MARK S. MILLER received his B.S. and M.S. degrees in aerospace engineering from Auburn University in 1984 and 1985, respectively. His areas of technical expertise include missile aerodynamic design, wind-tunnel testing, and performance analysis. In 1990, he joined Dynetics, Inc., where he is currently Manager of the Missile Systems Department, directing a group of engineers supporting a variety of missile-related projects for the Department of Defense. He has also been the Principal Investigator for four Small Business Innovative Research Contracts evaluating advanced aerodynamic control technologies for a variety of atmospheric vehicles. Mr. Miller has been a member of both the AIAA Atmospheric Flight Mechanics and the Applied Aerodynamics Technical Committees and served as the Technical Chair of the 1996 AIAA Applied Aerodynamics Conference.

GREGORY A. MOLVIK received B.S. (1982), M.S. (1984), and Ph.D. (1989) degrees from the Pennsylvania State University. His graduate research topics focused on computational fluid dynamic (CFD) modeling of high-speed reacting flows and laser propulsion. In 1984 he began working as a contractor at NASA Ames Research Center, where he worked primarily on advanced numerical algorithms for real gas computations with application to hypersonic systems. Next he joined Rotordynamic Seal Research as the CFD Group Leader and worked on the development of design tools for rotating machinery. He is currently the Chief Engineer for Computational Fluid Dynamics for Sverdrup Technology, Inc., at Arnold Engineering Development Center, where his responsibilities include CFD technical leadership, test and evaluation, business development, and program management. Greg is a member of AIAA and sits on the Fluid Dynamics Technical Committee.

MICHAEL P. NEMETH is a senior research engineer at the NASA Langley Research Center, where he served in the Structural Mechanics, Aircraft Structures, and Mechanics and Durability branches since 1983. He received a B.S. in civil engineering from North Carolina State University in 1977 and an M.S. in engineering and applied science from the NASA–George Washington University Joint Institute for Advancement of Flight Sciences in 1979. In 1983, he received a Ph.D. in engineering mechanics from the NASA–Virginia Tech Composite Materials Research and Education Program. He has conducted analytical and experimental research on the buckling, postbuckling, and fundamental mechanics of anisotropic plate and shell structures that has resulted in approximately 65 scientific publications. In 1992, he received the NASA Langley Floyd L. Thompson Fellowship Award. He has also conducted extensive studies of the buckling and nonlinear behavior of flight vehicles such as the Space Shuttle solid rocket boosters and the new superlightweight external tank. Recently, he received the NASA astronaut's personal achievement award for his contributions to space flight safety and mission success. He is currently an Associate Fellow of AIAA and a member of the AIAA Structures Technical Committee.

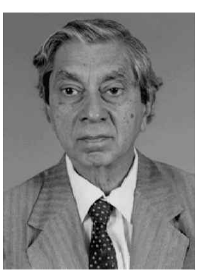
DAVID B. SPENCER is an Assistant Professor of Aerospace Engineering at the Pennsylvania State University. He teaches undergraduate and graduate courses in spacecraft dynamics and controls. Additionally, he conducts research in the areas of space debris dynamics, trajectory optimization, guidance, navigation, control, and theoretical and applied astrodynamics. Formerly, he was a Member of the Technical Staff at The Aerospace Corporation in Los Angeles and held various technical and management positions at the U.S. Air Force Research Laboratory's Space Vehicles Directorate in Albuquerque. He has a B.S. in mechanical engineering from the University of Kentucky, an M.S. in aeronautics and astronautics from Purdue University, and a Ph.D. in aerospace engineering sciences from the University of Colorado at Boulder. He was named an AIAA Associate Fellow in 1998, is the author of several technical publications, and serves on both the AIAA Astrodynamics Technical committee and the AAS Space Flight Mechanics Technical Committee.



JEFF C. TAYLOR received B.S. (1987), M.S. (1989), and Ph.D. (1994) degrees from North Carolina State University in aerospace engineering with emphasis on nonequilibrium rarefied reentry flows. He joined the Space Department of the Johns Hopkins University Applied Physics Laboratory in 1995 and is currently a Senior Aerospace Engineer conducting applied research on a variety of ballistic-missile-defense-related problems involving nonequilibrium rarefied reacting flows and optical signatures. He is a former member of the AIAA Thermophysics Technical Committee and has authored or coauthored over 30 technical papers.

MANUEL TORRES received his B.S. in aerospace engineering from the Polytechnic Institute of New York in 1985 and M.S. degree in aerospace engineering from Boston University in 1990. He is a staff scientist at the Science Applications International Corporation's Fluid Sciences Division, where he conducts design, test, and development efforts for strategic and theater missile systems, winged space/atmospheric vehicles, and the analysis of various aerophysics phenomena. Previously he was a senior engineer and project engineer with General Electric's Reentry Systems Department and Avco Systems Division, where he performed aerodynamic and aerothermal design and analysis of maneuvering and ballistic reentry vehicle systems, gun-launched maneuvering projectiles, satellite systems, and applied research. He was named an AIAA Associate Fellow in 1995, is the author of several technical publications, is a past Chairman and council member of AIAA's Greater Philadelphia Section, has served on the AIAA Young Members Committee, and is an associate member of SNAME and ASME.

ALAN TRIBBLE holds a B.S. in physics from the University of Arkansas and an M.S. and Ph.D. in physics from the University of Iowa. He worked in the Advanced Programs Engineering group of Rockwell International's (now Boeing's) Space Systems Division for eight years, where he supported a variety of scientific, commercial, and military satellite programs. He has been a Principal Investigator for the NASA Space Environments and Effects program and is the author of over 20 technical publications and two books. He is the instructor for the AIAA short course "The Space Environment: Implications for Spacecraft Design" and has served as an instructor for the University of Southern California; California State University, Long Beach; and the University of Iowa. He is now a manager for Rockwell Collins in Cedar Rapids, Iowa.



IRWIN E. VAS has been employed by The Boeing Company since 1987. He received his B.M.E. and B.A.E. from the Catholic University of America, his M.S.E. from Princeton University, and his Ph.D. in aeronautics and astronautics from New York University. He worked in supersonic and hypersonic experimental gas dynamics at Princeton University for 25 years. The high-Reynolds-number supersonic flows dealt primarily with two- and three-dimensional shock wave/boundary-layer interactions. The hypersonic flows created in helium and heated nitrogen facilities dealt with two-dimensional and axially symmetric phenomena of sharp and blunted shapes, including incidence effects. On leaving Princeton University, he joined the Solar Energy Research Institute (currently National Renewable Energy Laboratory) as Program Manager for Wind Energy. He later joined Flow Industries/Flowind Corporation in Seattle, a company that designed and manufactured vertical-axis wind turbines. He is currently working on advanced space transportation technologies and systems for the Defense and Space Group of The Boeing Company. He has published approximately 100 technical papers in the area of gas dynamics, wind energy, and space technologies. He is an Associate Fellow of the AIAA.

Editorial Policy Statement on Numerical Accuracy and Experimental Uncertainty

The purpose of this statement is to reiterate the desire to have high-quality investigations with properly documented results published in the AIAA journals, and to clarify acceptable standards for presentation of numerical and experimental results. Recently there has been considerable concern with the quality of published numerical solutions. Also the practice of including error bars on experimental results is often lacking. In response to these problems, a succinct policy statement on these items is as follows:

> *The AIAA journals will not accept for publication any paper reporting (1) numerical solutions of an engineering problem that fails adequately to address accuracy of the computed results or (2) experimental results unless the accuracy of the data is adequately presented.*

The implementation of this policy will be at the discretion of the Editors and Associate Editors of the journals.

The accuracy of the computed results is concerned with how well the specified governing equations in the paper have been solved numerically. The appropriateness of the governing equations for modeling the physical phenomena and comparison with experimental data is not part of this evaluation. Accuracy of the numerical results can be judged from grid refinement studies, variation of numerical parameters that influence the results, comparison with exact solutions, and any other technique the author selects. The validity of the accuracy estimation will be judged by the reviewers of the paper. An estimate of accuracy of the numerical results must be presented when comparisons with other numerical and experimental results are given, and when new results of the author will likely become data for future comparisons. Since accuracy of various computed results obtained from a numerical solution can vary significantly, the accuracy of the result being used must be stated. Accuracy of results from a validated code must still be established to show that proper input parameters have been used with the code.

Estimates of experimental uncertainty are required for all plotted or tabulated data obtained by authors. If data from other workers are used, they require no uncertainty. Unless otherwise stated and properly referenced, it is assumed that the uncertainty of authors' output data is estimated by the small-sample method[1] with assumed odds 20:1. All reported data must show uncertainty estimates if used in text or tables; for example, $T = 642 \pm 8$ K. All figures reporting new data should contain uncertainty estimates either on the figure with error bars in both coordinate directions or in the caption; for example, uncertainty in $T = \pm 8$ K at 20:1 odds. Investigations with limited data should present tabulated results in the paper while extensive data should be available elsewhere in tabulated form for use by other workers.

Finally, the accepted documentation procedures for a technical investigation must be used. For computational papers, the author must provide an adequate description of the numerical solution procedure, if not documented elsewhere. In addition, the complete governing equations must be specified with sufficient detail along with the input parameters to the code so that a reader could reproduce the results of the paper. For papers concerned with experimental test, thorough documentation of the experimental conditions, instrumentation, and data reduction techniques is required.

[1] Kline, S. J., and McClintock, F. A., "Describing Uncertainties in Simple-Sample Experiments," *Mechanical Engineering*, Jan. 1953, pp. 3–8.