David R. Schultz

Accomplished and effective researcher, research manager, and academic administrator; Collaborative strategist and implementor; Collegial and inclusive leader valuing a diversity of perspectives and team members, seeking alignment of interests

Roles as Executive Team Member, Director, Vice President for Research, Department Chair, Faculty Member, Group Leader, Distinguished R&D Staff Member

Professional Experience:

Executive Team Member, Universities Research Association (URA), January 2021-present

URA is an association of over 90 predominantly Carnegie R1 research universities, established in 1967 to manage national laboratories in the national interest. URA has been the Management and Operating contractor for Fermi National Accelerator Laboratory (FNAL) since its inception, partnering in that role with the University of Chicago since 2007, and has been part of the Management and Operating team for Sandia National Laboratories (SNL) since 2016.

- Participating in the strategic planning of the executive team
- Advising and supporting the executive team in URA's roles in management and operation of FANL and SNL
- Chairing URA's Advisory Group for Fermilab, leading URA's Virtual Research Policy Forums, and participating in the leadership of new proposed contracts

Director, URA Sandia Site Office, January 2021-present

Leading a team of six staff members at the URA Sandia Site Office in support of Sandia's Chief Research Officer (CRO) and Sandia's Science, Technology, and Engineering (ST&E) organizations in achieving their missions

- Aiding strategic planning by undertaking landscape analysis, augmented through organization of future-direction workshops, to establish external R&D trends, capabilities, leadership, and directions, and to identify opportunities for new R&D directions, partnerships, and investments
- Providing external calibration of performance for ST&E organizations through research productivity analysis and support for external review boards
- Supporting university partnerships and diverse workforce development through service on the Sandia University Partnerships Network Governing Board; support of Academic Programs' Campus Executives, Campus Partnership Managers, and Campus Partnership Development staff
- Developed and funded the *URA-Sandia Graduate Summer Fellowship* program, providing 10 diverse students outstanding research experiences each year, benefiting Sandian R&D, building longer-term internship, postdoc,

and staff opportunities, and aiding development of connections between Sandia and strategically important universities and research groups

Vice President for Research, Northern Arizona University (NAU), August 2017-January 2021

Elevated the performance, impact, and organization of the research enterprise at NAU in synergy with the university's educational mission by expanding and improving research, scholarship, and creative activity, and by implementing best practices in research strategy, administration, and support

- Led strategy and actions to increase annual research expenditures and created a plan of actions to reach the university's near-term potential
- Partnered with NAU's President, Provost, other vice presidents, College Deans, Department Chairs, and other stakeholders to make strategic faculty hires and research active faculty hires
- Re-organized and re-developed NAU's *Office of Sponsored Projects*, *Office of Research Compliance*, and intellectual property management and commercialization unit, *NAU Innovations*
- Created new research seed programs, expanded research institutes (e.g., bioscience, environmental science, information science), expanded shared research facilities (e.g., high-performance computing, biochemistry, animal research), and funded start-ups for new research-active faculty hires
- Contributed state support for research to STEM education (e.g., curriculum and on-line course development) and shared budget authority with the vice president for finance and operations for research infrastructure
- Worked closely with the vice president for government relations to develop state funding opportunities for research and with federal relations consultants to develop federal budget plus ups for research; collaborated with the vice presidents for research at Arizona State University and the University of Arizona on development of state and private investments
- Led design and procurement of new modular laboratories to house growing research activity in biological, physical, and chemical sciences and participated in a team effort in the design of a new STEM research and education building
- Collaborated with university advancement in donor fund raising for research

Associate Vice President for Research and Innovation, University of North Texas (UNT), 2013-17

Supported the Vice President for Research and Innovation in elevating the performance, impact, and organization of UNT, and led a number of research administrative organizations and specific initiatives

- Led strategic planning for research faculty hiring, research space allocation and expansion, investments to result in a growing volume of sponsored projects, and the establishment of Institutes of Research Excellence in bioscience, environmental science, and materials science
- Led contacts with industries, government laboratories, other universities, and research sponsors to develop new or enhanced collaborations and partnerships; for example, working with UNT's federal relations team, established collaborations with DoD national laboratories through CRADAs and multi-university grants
- Supervised the Office of Grants and Contracts Administration and the Office of Research Integrity and Compliance; administered university shared research facilities; and managed and led selection of research internal grants and awards

Chair, Department of Physics, UNT, 2011-13

Brought collegial leadership and collaborative vision to a department in need of a turnaround in performance of its educational and research missions

- Through open and deep engagement with department faculty members and other stakeholders, including students and other academic departments, led improvements in undergraduate and graduate education along with synergistic growth of sponsored research projects and research mentorship of students
- Managed department operations for 27 faculty members, 17 staff members, 100 majors, 60 graduate students, and 5000 undergraduates annually in engineering, biology, physics, music, and other majors

Group Leader, Atomic Physics, Nuclear Physics Division, Oak Ridge National Laboratory (ORNL), 2000-11

Led research programs for the U.S. Department of Energy's Office of Basic Energy Sciences and Office of Fusion Energy Sciences, and collaborated with ORNL Nuclear Physics Program

- Managed program elements consisting of two mid-scale research laboratories, computational/theoretical science, and a data/information center:
    - EN Tandem Accelerator laboratory and group working at CERN in relativistic ion-ion pair-production and stopping power experiments

- Multicharged ion accelerator laboratory supporting fundamental few-body physics and plasmas science applications
- Contributing support for resonance laser ionization ion source development for nuclear physics applications
- Led development of ultrafast, ultraintense laser particle accelerator development for x-ray science and electron acceleration
- Theoretical few-body physics and simulation using high-performance computing for plasma science applications

➢ Active in obtaining competitively awarded internal development funds to build synergistic sponsored work with funding beyond the group's base from NASA, DoD, NIH, and other funders and to develop new experimental research facilities

***Other Professional Experience*:**

Professor, Department of Astronomy and Planetary Science and **Professor**, Department of Applied Physics and Materials Science, NAU, 2017-21

Professor (2011-17) and **Research Professor** (2017-19), Department of Physics, UNT

Research Professor (2007-11) and **Adjunct Professor** (1998-2007), Department of Physics and Astronomy, University of Tennessee, Knoxville

Staff Member, Physics Division, ORNL, 1992-2011; **Director**, Controlled Fusion Atomic Data Center, ORNL, 1992-2011; **Task Leader**, Theoretical Atomic Physics, ORNL, 1995-2005

***R&D Funding History*:** PI or Co-PI on grants totaling approximately $60M from DOE, NASA, NRO, NSF, DHS, and ARL 1992-present, including 14 small team, 3-4/year grants from NASA programs such as Astrophysics Research and Analysis, Astrophysics Theory, Astrophysical Data and Analysis, and Planetary Atmospheres

DOE Q Security Clearance: 2007-11, 2021-present

***Professional Societies, Affiliations and Service*:**

Vice President, President-Elect, President, and **Past President**, New Mexico Academy of Science (NMAS), 2023-26

NMAS' mission is to support and advocate for science and innovation in NM, and promote, serve, and inform students, teachers, state government and the citizens of NM

Member, National Science Foundation Committee of Visitors, Physics Division, 2022-23

Member, Committee on Atomic, Molecular, and Optical Sciences (CAMOS), 2009-12, 2012-15

CAMOS, a committee of the National Academy of Sciences' Board on Physics and Astronomy, proposes and oversees technical studies, scientific surveys, and conducts workshops and other meetings, aimed at assessing and stewarding the nation's atomic, molecular, and optical science

Fellow of the American Physical Society (APS), elected 2000

Vice Chair, **Chair Elect**, **Chair**, and **Past Chair**, APS Division of Atomic, Molecular, and Optical Physics (DAMOP), 2010-14

DAMOP, one of the oldest Divisions of the American Physical Society, is the national organization of scientists, students, and professionals in atomic, molecular, and optical sciences and allied areas of R&D

Secretary/Treasurer, APS DAMOP, 2005-08

Executive Committee Member, APS DAMOP, 2002-05

APS Divisional Councilor for DAMOP, 2019-22

Local Co-Chair, APS Annual DAMOP Conference, 2006

Local Chair, APS Annual DAMOP Conference, 2011

Secretary, Theoretical Atomic, Molecular, and Optical Community of the APS DAMOP, 1995-98

Member, APS Committee on Meetings, 2016-18

Member, Association of Public and Land-Grant Universities, Council on Research, 2013-21

Editor, Atomic Data and Nuclear Data Tables (ADNDT), 2001-15

ADNDT is a leading journal devoted to the compilation of data for both fundamental physical investigations and applied research such as in astrophysics, plasma science, and nuclear science and engineering

Editorial Board Member, ADNDT, 1993-2000, 2015-present

Advisory Group Member and **Consultant**, Atomic and Molecular Data Unit, International Atomic Energy Agency (IAEA), 1991-present

Service as a provider of data and expert advice to the IAEA in the areas of atomic, molecular, optical, and particle-surface interaction data, plasma science, and scientific and technical data production, compilation, evaluation, recommendation, and dissemination

Member, IAEA International Fusion Research Council Subcommittee on Atomic and Molecular Data for Fusion, 2010-2016

Editorial Board Member, International Bulletin on Atomic and Molecular Data for Fusion, 1993-2013

Editorial Board Member, Atomic and Plasma-Material Interaction Data for Fusion, 1998-2014

International Advisory Board Member, Institute of Physics (IOP) Journal of Physics B, 2003-13

Editorial Board Member, IOP, Computational Science and Discovery, 2009-2012

Fellow, IOP, named 2008

Member, Department of Energy (DOE), Office of Fusion Energy Sciences Edge Coordinating Committee, 2004-10

Panelist, DOE Scientific Grand Challenges: Fusion Energy Sciences and the Role of Computing at the Extreme Scale, 2009

Member, DOE Office of Basic Energy Sciences, Atomic, Molecular, and Optical Physics, Review Committee, Kansas State University, 2000, 2003, 2009

Member, National Institute of Standards and Technology, Physics Laboratory Review Committee, National Research Council, 2004-07

Member, Lawrence Berkeley National Laboratory Director's Review Committee, Atomic, Molecular, and Optical Sciences Group, Chemical Sciences Division, 2005

Treasurer, International Conference on Atomic and Molecular Data and Their Applications (ICAMDATA), 1997-2004

Member, International Advisory Board, ICAMDATA, 2004-10

Local Chair, 3rd ICAMDATA, 2002

Executive Committee, APS Topical Conference on Atomic Processes in Plasmas (APiP), 2000-10

Local Chair, 13th APS Topical Conference on APiP, 2002

Member, Program Committee, International Conference on Electronic, Atomic, and Photonic Collisions (ICPEAC), 2004-07

Member, Local Committee, ICPEAC, 2001, 2009

Local Chair, NASA Laboratory Astrophysics Workshop, 2010

Local Co-Chair, International Workshop on Electrostatic Storage Devices, 2011

Member, American Astronomical Society

Member, International Astronomical Union (IAU)

Chair, Working Group 3: Collision Processes, IAU, Commission 14: Atomic and Molecular Data, 1996-2005

Founding Chair, Southeast Laboratory Astrophysics Community (SELAC), 2003; Chair, SELAC Executive Committee, 2003-12

Graduate, Inaugural Class, Developing Leadership Potential, ORNL, 2007

UNT Leadership **Fellow**, 2012-13

***Education*:**

B.A., Physics, Washington University, St. Louis, Missouri, 1983
Member, Sigma Pi Sigma, Physics Honor Fraternity, induction 1987
Sandia National Laboratory Outstanding **Graduate Fellow**, 1988
Recipient, Sigma Xi Grant-In-Aid for Graduate Research, 1988
Ph.D., Physics, University of Missouri, Rolla (UMR), 1989
Postdoctoral Research Assistant, University of Missouri-Rolla (UMR), 1989-91
US DOE Fusion Energy **Postdoctoral Fellow**, ORNL, 1991-92

***Publications*:** 228, Google Scholar h-index 45, i10 index 144

Research interests: The study of atomic scale interactions involving atoms, ions, molecules, and light; theoretical and computational atomic physics; hydrodynamical interpretation of quantum mechanics in atomic scale interactions; applications in astrophysics, plasma science, energy science

228. S.J. Houston, T.E. Cravens, O.Q. Hamil, J.H. Waite, and D.R. Schultz, "*Jovian auroral proton precipitation*," Journal of Geophysical Research: Space Physics, 131, 2026JA035455 (2026)

224. D.R. Schultz, R. Wang, P.C. Stancil, and N.D. Cariatore, "*Data for proton transport through atomic hydrogen environments: Elastic scattering*" Atomic Data and Nuclear Data Tables 154, 101601 (2023)

221. Dipti, D.R. Schultz, and Yu. Ralchenko, "*Charge exchange recombination spectroscopy of W^{q+} (q=61-66) for application to ITER neutral hydrogen beam diagnostics*," Plasma Physics and Controlled Fusion, 63, 115010 (2021)

217. D.R. Schultz, H. Gharibnejad, T.E. Cravens, and S.J. Houston, "*Data for secondary-electron production from ion precipitation at Jupiter III: Target and projectile processes in H^+, H, and H^- + H_2 collisions*," Atomic Data and Nuclear Data Tables 132, 101307 (2020)

212. S.J. Houston, N. Ozak, J. Young, T.E. Cravens, and D.R. Schultz, "*Jovian auroral ion precipitation: Field-aligned currents and ultraviolet emissions*," J. Geophys. Res.: Space Physics 123, 2257 (2018)

204. T. Schlummer, O. Marchuk, D.R. Schultz, G. Bertschinger, W. Biel, D. Reiter and the TEXTOR-Team, "*Comparison of effective rate coefficients for high energy charge-exchange with measurements of the Rydberg series of Ar^{16+} at the tokamak TEXTOR*," J. Phys. B 48, 144033 (2015)

198. L.Ph.H. Schmidt, C. Goihl, D. Metz, H. Schmidt-Bocking, R. Dorner, S.Y. Ovchinnikov J.H. Macek and D.R. Schultz, "*Vortices associated with the wavefunction of a single electron emitted in slow ion-atom collisions*," Phys. Rev. Lett. 112, 083201 (2014)

196. N. Ozak, T.E. Cravens and D.R. Schultz, "*Auroral ion precipitation at Jupiter: Predictions for Juno*," Geophysical Research Letters 40, 4144 (2013)

191. O. Marchuk, Y. Ralchenko and D.R. Schultz, "*Non-statistical population distributions*
for hydrogen beams in fusion plasmas," Plasma Phys. Control. Fusion 54, 095010 (2012)

183. S.Y. Ovchinnikov, J.B. Sternberg, J.H. Macek, T-G. Lee and D.R. Schultz, "*Creating and manipulating vortices in atomic wavefunctions with short electric field pulses*," Phys. Rev. Lett. 105, 203005 (2009)

156. A. Maksimchuk, S. Reed, S.S. Bulanov, V. Chvykov, G. Kalintchenko, T. Matsuoka, C. McGuffey, G. Mourou, N. Naumova, J. Nees, P. Rousseau, V. Yanovsky, K. Krushelnick, N.H. Matlis, S. Kalmykov, G. Shvets, M.C. Downer, C.R. Vane, J.R. Beene, D. Stracener, and D.R. Schultz, "*Studies of laser wakefield structures and electron acceleration in underdense plasmas*," Phys. Plasmas 15, 056703 (2008)

141. V. Kharchenko, A. Dalgarno, D.R. Schultz, and P.C. Stancil, "*Ion emission spectra in the Jovian x-ray aurora*," Geophys. Res. Lett. 33, L11105 (2006)

100. M.A. Abdallah, C.R. Vane, C.C. Havener, D.R. Schultz, H.F. Krause, N. Jones, and S. Datz, "*Multiple ionization in fast ion-atom collisions: Simultaneous measurement of recoil momentum and projectile energy loss*," Phys. Rev. Lett. 85, 278 (2000)

90. D.R. Schultz, M.R. Strayer, and J.C. Wells, "*Lattice, time-dependent Schrödinger equation solution for ion-atom collisions*," Phys. Rev. Lett. 82, 3976 (1999)

59. W. Liu, D.J. Jeffery, and D.R. Schultz, "*Nebular spectra of Type Ia supernovae*," Ap. J. Lett. 483, L107 (1997)