Daniel Vrinceanu

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▷EDUCATION AND UNIVERSITY DEGREES

Harvard-Smithsonian Center for Astrophysics, Georgia Institute of Technology, U. of Bucharest

▷PROFESSIONAL EMPLOYMENT HISTORY

Texas Southern University, Los Alamos National Laboratory, Harvard-Smithsonian CfA

▷HONORS AND AWARDS

Director Fellowship, finalist for DAMOP Thesis Award, Sigma Xi Award for the best PhD Thesis

▷VISITING APPOINTMENTS

Georgia Institute of Technology, Clark-Atlanta University, DESY Hamburg

▷CURRENT RESEARCH FIELDS OF INTEREST

many body strongly correlated systems, anti-hydrogen formation, Rydberg gases and frozen plasmas

▷TEACHING EXPERIENCE

undergraduate, graduate, mentoring

▷PROFESSIONAL MEMBERSHIPS, ACTIVITIES AND SERVICE

American Physical Society, referee for many journals, High Performance Computing

▷RESEARCH GRANTS AND FUNDING

National Science Foundation, Army Research Office, U.S. Navy

▷REFEREED PUBLICATIONS IN SCIENTIFIC JOURNALS

more than 80 publications

▷INVITED TALKS

more than 30 talks

▷PROFESSIONAL MEETINGS AND CONFERENCES

more than 40 conference participation

▷OTHER RESEARCH PRODUCTS

software and patents

▷REFERENCES LETTERS MAY BE OBTAINED FROM:

B. Naduvalath, L. A. Collins, H. R. Sadeghpour, T. Killian

▽ EDUCATION AND UNIVERSITY DEGREES (back to index page)

- **ITAMP Fellow:** 2001 – 2004 Harvard-Smithsonian Center for Astrophysics
  Independent research in Theoretical Atomic and Molecular Physics
- **PhD in Physics:** 1996 – 2000 Georgia Institute of Technology
  GPA: 4.0, Supervisor: Prof. M. R. Flannery
  PhD Thesis: *Quantal-Classical Correspondence in Atomic Collisions*
- **MS in Physics:** 1986 – 1992 University of Bucharest
  Graduated in the first 3% from 100 students in the class with the graduate diploma thesis in Theoretical Physics: *Quantum Groups and Hopf Algebra*

▽ PROFESSIONAL EMPLOYMENT HISTORY (back to index page)

- **Professor:** Sep. 2019 – present Texas Southern University
- **Associate Professor:** 2015 – 2019 Texas Southern University
- **Assistant Professor:** 2010 – 2015 Texas Southern University
- **Visiting Associate Professor:** 2008 – 2010 Texas Southern University
- **Director Fellowship:** 2004 – 2008 Los Alamos National Laboratory
- **ITAMP Fellowship:** 2001 – 2004 Harvard-Smithsonian Center for Astrophysics
- **Visiting Assistant Professor:** 2000 – 2001 Georgia Institute of Technology
- **Teaching Assistant:** 1996 – 2000 Georgia Institute of Technology
- **Assistant Professor:** 1992 – 1996 University of Bucharest
- **Researcher:** 1993 – 1994 Biophysics Lab., Center for Biotechnologies, Bucharest

▽ HONORS AND AWARDS (back to index page)

- **Dean's Leadership Award**, Texas Southern University – 2023
- **Dean's Leadership Award**, Texas Southern University – 2016
- **Scholarly Research/Creative Activities Award**, Texas Southern University – 2014
- **Distinguished Research/Scholarly Activity Award**, College of Science and Technology, Texas Southern University – 2014
- **Dean's Leadership Award**, Texas Southern University – 2012
- **Director Fellowship**, Los Alamos National Laboratory – 2004
- **Finalist in DAMOP Thesis Award** competition of American Physical Society – 2002
- **Sigma Xi Award for the best PhD Thesis** – 2001

- ◇ **Motorola SPS Fellowship** – 1998
- ◇ **Gill Amelio Fellowship** – 1998
- ◇ **Bronze Medal** at the 17^{th} International Physics Olympiad – London, 1986
- ◇ **Romanian Government Scholarship** for accomplished student, 1989 - 1992

▽ VISITING APPOINTMENTS (back to index page)

- ◇ CTSPS, Clark Atlanta University: May - Aug 2000, Nov 1998 - May 1999, Feb - Jun 1996
- ◇ DESY, Hamburg, Germany: Oct - Dec 1992

▽ CURRENT RESEARCH FIELDS OF INTEREST (back to index page)

- ◇ Theoretical Foundations of Deep Learning and Artificial Intelligence, Explainability and Interpretability of Deep Neural Networks
- ◇ matter at extreme conditions – strongly correlated system: novel computational algorithms for ultracold ionized gases, ultrafast pulses, quantum computing and BEC
- ◇ formation, capture and detection of anti-hydrogen atoms in a Penning trap
- ◇ interaction and collisions in ultracold Rydberg gases and frozen plasmas, electron impact ionization of Rydberg atoms, interaction between Rydberg atoms, radiative processes involving Rydberg atoms, three-body recombination
- ◇ collisional and radiative properties of metastable helium atoms, collisional broadening and shift of atomic and ionic lines
- ◇ High performance computing, parallel algorithms, computational physics
- ◇ Integrability of algebraic quantum systems

▽ TEACHING EXPERIENCE (back to index page)

- ◇ undergraduate classes:
  Principles of Physical Science, **University Physics**, **Thermal Physics**, **Quantum Mechanics** and **Computational Physics** at Texas Southern University
- ◇ online undergraduate classes:
  Mathematical Physics, **Atomic Physics**, **Classical Mechanics**, **General Relativity** and **Physics Research Project** for the Texas Physics Consortium
- ◇ tutorial sessions and physics labs for undergraduate classes:
  Introductory Physics at Harvard University and Georgia Institute of Technology
- ◇ recitations and homework grading for graduate classes:
  Classical Mechanics, Statistical Physics, Classical Electrodynamics at Georgia Institute of Technology and the University of Bucharest

- ◇ lecturing to undergraduate classes ($\sim$ 50 - 60 students):
  Classical Electrodynamics, Quantum Mechanics and **Numerical Methods in Physics** at the University of Bucharest
- ◇ **mentor/advisor** for graduate and undergraduate students, at Texas Southern University, Harvard Smithsonian Center for Astrophysics, Los Alamos National Laboratory and University of Bucharest

▽ PROFESSIONAL MEMBERSHIPS, ACTIVITIES AND SERVICE (back to index page)

- ◇ **Reviewer** in National Science Fundation review panels
- ◇ **Referee** work for: Physical Review Letters, Physical Review A, Journal of Physics A, Journal of Physics B, Journal of Mathematical Physics, Journal of Chemical Physics, American Journal of Physics, Plasmonics, Mathematical Review and Astronomy, & Astrophysics
- ◇ **Member**, American Physical Society since 1996
- ◇ **Judge** at high school science fairs: McCurdy High School (Espanola, NM), I-SWEEP 2009 (Houston, TX), 2010 - Science and Engineering Festival (Austin, TX)
- ◇ **Conference organizer**: ACPC/TRACER meeting 2023, DAMOP 2010 (*local organizing committee*)
- ◇ **Director**: Texas Southern University High Performance Computing Center (`http://hpcc.tsu.edu`)
- ◇ **Website Design and Maintainance**: College of Science, Engineering and Technology since 2016 (`http://coset.tsu.edu`)

▽ RESEARCH GRANTS AND FUNDING (back to index page)

- ◇ Airforce Office of Scientific Research **Basic Research National Science Portals**, 2023-2027, $2,250,000, Co-PI: Center for Scientific Machine Learning for Material Sciences
- ◇ U.S. Department of Energy **Reaching a New Energy Sciences Workforce**, 2023-2026, $720,000, PI: Partnership for Fostering Graduate Training in Atmospheric Sciences at Texas Southern University
- ◇ National Science Foundation **Targeted Infusion Project**, 2022-2025, $400,000, Co-PI: *Advancing Basic Science Research and Undergraduate Education in Computer Vision*
- ◇ National Science Foundation **Partnerships for Research and Education in Physics**, 2022-2025, $900,000, Co-PI: *Establishment of Research and Education Partnerships for Underrepresented Students in Biophysics at Texas Southern University*
- ◇ National Institute for Health **Research Centers in Minority Institutions**, 2020-2025, $8,600,000, I: *Center for Biomedical and Minority Health Research*
- ◇ National Science Foundation **Excellence in Research**, 2018-2021, $466,515, Co-PI: *Collaborative Research: Strenghten the Foundation of Big Data Analytics via Interdisciplinary Research among HBCUs*
- ◇ National Science Foundation **Excellence in Research**, 2018-2021, $273,951, PI: *Dynamics of High-L States of Rydberg atoms*

- ◇ National Science Foundation **Research Infrastructure for Science and Engineering**, 2018-2021, $999,786, PI: *Characterization, Dynamics, and Biological Impact of Indoor Airborne Dust Exposure*
- ◇ National Science Foundation **Research Infrastructure for Science and Engineering**, 2014-2017, $991,206, Co-PI: *Characterization of Biomolecular Response to Environmental Stress*
- ◇ Army Research Office **Research and Education Program for HBCU**, 2013-2016, $634,220, Co-PI: *Many Body Density Matrix Theory: Excitations and Time Dependent Response*
- ◇ National Science Foundation **Major Research Instrumentation**, 2011-2013, $220,000, Co-PI: *Acquisition of HPC at Texas Southern University to Expand Capabilities for Research and Training through Shared High Performance Computing*
- ◇ National Science Foundation **Centers of Research Excellence in Science and Technology**, 2011 - 2016, $4,887,000, Co-I: *Center for Research on Complex Networks*
- ◇ Naval Air Warfare Center, **Research contract**, 2010, $60,000, Co-PI: *Agreement between the Naval Air Warfare Center Ad and Texas Southern University*
- ◇ National Science Foundation, **TeraGrid High Performance Computing**, 2010, 1,000,000 computation units: *Electron and ion Rydberg atom collisions*
- ◇ Texas Southern University, **Seed Grant**, 2010, $25,000, Co-PI: *Computational Efficacy of Classical and Quantum Information Security Methodologies*
- ◇ Texas Southern University, **Seed Grant**, 2009, $15,000, Co-PI: *Decoherence Related Challenges in Quantum Computing*
- ◇ Texas Southern University, **Title III Grant**, 2009, $55,000, Co-PI: *High Performance Computing at Texas Southern University*
- ◇ National Science Foundation, **TeraGrid High Performance Computing**, 2009, 190,000 computation units, Co-PI: *Ultracold molecular photoassociation dynamics of lithium-yetterbium atoms; and three-body recombination in magnetized cold plasmas*

▽ REFEREED PUBLICATIONS IN SCIENTIFIC JOURNALS (back to index page)

89. *Accurate quantum states for a 2D-dipole*
by **D. Vrinceanu**
Nanomaterials **14**, 206 (2024)

88. *Impacts of Indoor Dust Exposure on Human Colonic Cell Viability, Cytotoxicity and Apoptosis*
by N. Abdulrahman, T. J. Honda, A. Ali, N. Abdulrahman, **D. Vrinceanu**, and S. Shishodia
Toxics **11**, 163 (2023)

87. *Model of charge transfer collisions between C_{60} and slow ions*
by J. Smucker, J. A. Montgomery, M. Bredice, M. G. Rozman, R. Côté, H. R. Sadeghpour, **D. Vrinceanu**, and V. Kharchenko
Journal of Chemical Physics **157**, 054303 (2022)

86. *Kinetics and nucleation dynamics in ion-seeded atomic clusters*
by M. G. Rozman, M. Bredice, J. Smucker, H. R. Sadeghpour, **D. Vrinceanu**, R. Cote, and V. Kharchenko
Physical. Rev. A **105**, 022807 (2022)

85. *Characterization of Chemical and Bacterial Concentrations in Floor Dust Samples in Southeast Texas Households*
by F. R. Davis, H. H. Ali, J. A. Rosenzweig, **D. Vrinceanu**, and M. S. B. Bhaskar
International Journal of Environmental Research and Public Health **18**, 12399 (2021)

84. *Discovering Nonlinear Dynamics Through Scientific Machine Learning*
by L. Huang, **D. Vrinceanu**, Y. Wang, N. Kulathunga, N. Ranasinghe
Lecture notes in networks and systems **1**, 261 (2021)

83. *Assessment of soil and water characteristics and land cover changes along the Tigris River in Baghdad*
by H. H. Ali, J. A. Rosenzweig, S. Shishodia, **D. Vrinceanu**, and M. S. B. Bhaskar
International Journal of Water Resources and Environmental Engineerings **13**, 57 (2021)

82. *Effects of Nonlinearity and Network Architecture on the Performance of Supervised Neural Networks*
by N. Kulathunga, N. Ranasinghe, **D. Vrinceanu**, Z. Kinsman, L. Huang, Y. Wang
Algorithms **15**, 51 (2021)

81. *Non-Maxwellian rate coefficients for electron and ion collisions in Rydberg plasmas: Implications for excitation and ionization*
by **D. Vrinceanu**, R. Onofrio and H. R. Sadeghpour
Journal of Plasma Physics **86**, 845860301 (2020)

80. *Formation of Argon Cluster with Proton Seeding*
by O.C.F. Brown, **D. Vrinceanu**, V. Kharchenko and H.R. Sadeghpour
Molecular Physics **118**, e1767813 (2020)

79. *Combined molecular-dynamics and quantum-trajectories simulation of laser-driven, collisional systems*
by G. M. Gorman, T. K. Langin, M. K. Warrens, **D. Vrinceanu**, and T. C. Killian
Physical. Rev. A **101**, 012710 (2020)

78. *Efficient computation of collisional l-mixing rate coefficients in astrophysical plasmas*
by **D. Vrinceanu**, R. Onofrio, J. B. R. Oonk, P. Salas and H. R. Sadeghpour
The Astrophysical Journal **879**, 115 (2019)

77. *Theory and simulation of spectral line broadening by exoplanetary atmospheric haze*
by Z. Felfli, T. Karman, V. Kharchenko, **D. Vrinceanu**, J. F. Babb and H. R. Sadeghpour
Monthly Notices of the Astronomical Society **482**, 1330 (2019)

76. *Recovery of the starting times of delayed signals*
by L. Perotti, **D. Vrinceanu** and D. Bessis
IEEE Signal Processing Letters **25**, 1455 (2018)

75. *On the treatment of l-changing proton-hydrogen Rydberg atom collisions*
by **D. Vrinceanu**, R. Onofrio and H. R. Sadeghpour
Monthly Notices of the Astronomical Society **471**, 3051 (2017)

74. *Vertical Alignment of Educational Opportunities for STEM Learners from High School through the Ph.D.: An Interdisciplinary Project Evaluating the Effects of Road Dust on Biological Systems*
by J. A. Rosenzweig, **D. Vrinceanu**, H.-M. Hwang, and S. Shishodia
American Biology Teacher **78**, 710 (2016)

73. *A Power Moment Reformulation of the Nikiforov-Uvarov Method for Exactly Solvable Systems*
by C. R. Handy and **D. Vrinceanu**
Canadian Journal of Physics **94**, 410 (2016)

72. *Demonstrating universal scaling for dynamics of Yukawa one-component plasmas after an interaction quench*
by T. K. Langin, T. Strickler, N. Maksimovic, P. McQuillen, T. Pohl, **D. Vrinceanu**, and T. C. Killian
Phys. Rev. E **93**, 023201 (2016)

71. *Momentum space orthogonal polynomial projection quantization*
by C. R. Handy, **D. Vrinceanu**, C. Marth, R. Gupta
J. Phys. A **49**, 145205 (2016)

70. *Pointwise reconstruction of wave functions from their moments through weighted polynomial expansions: an alternative global-local quantization procedure*
by C. R. Handy, **D. Vrinceanu**, C. B. Marth and H. A. Brooks
Mathematics **3**, 1045 (2015)

69. *Global-Local Algebraic Quantization of a Two-Dimensional Non-Hermitian Potential*
by **D. Vrinceanu**, C. B. Marth and C. R. Handy
International Journal of Theoretical Physics **54**, 4005 (2015)

68. *Identification of GW bursts in high noise using Pade filtering*
by L. Perotti, T. Regimbau, **D. Vrinceanu** and D. Bessis
Physical Review D **90**, 124047 (2014)

67. *Accurate quantum states for a 2D-dipole*
by **D. Vrinceanu**
Physical Review B (under review) **XX**, under review (2014)

66. *Constraints on Cosmic Strings from the LIGO-Virgo Gravitational-Wave Detectors*
by J. Aasi et al. (LIGO Scientific Collaboration and Virgo Collaboration)
Physical Review Letters **112**, 131101 (2014)

65. *A moments's analysis of quasi-exactly solvable systems: a new perspective on the sextic potential* $g\,x^6 + b\,x^4 + m\,x^2 + \beta/x^2$
by C. R. Handy, **D. Vrinceanu** and R. Gupta
J. Phys. A **47**, 295203 (2014)

64. *Application of a Hough search for continuous gravitational waves on data from the fifth LIGO science run*
by J. Aasi et al. (LIGO Scientific Collaboration and Virgo Collaboration)
Classical and Quantum Gravity **31**, 2572 (2014)

63. *Gravitational waves from known pulsars: results from the initial detector era*
by J. Aasi et al. (LIGO Scientific Collaboration and Virgo Collaboration)
Astrophysical Journal **785**, 119 (2014)

62. *First searches for optical counterparts to gravitational-wave candidate events*
by J. Aasi et al. (LIGO Scientific Collaboration and Virgo Collaboration)
Astrophysical Journal Supplement Series **211**, 7 (2014)

61. *Comprehensive rate coefficients for electron collision induced transitions in hydrogen*
by **D. Vrinceanu**, R. Onofrio and H. R. Sadeghpour
Astrophysical Journal **780**, 2 (2014)

60. *Search for long-lived gravitational-wave transients coincident with long gamma-ray bursts*
by J. Aasi et al. (LIGO Scientific Collaboration and Virgo Collaboration)
Physical Review D **88**, 122004 (2013)

59. *Parallel Sparse Matrix-Matrix Multiplication: A Scalable Solution with 1-D Algorithm*
by M. Hoque, M. R. Raju, C. Tymczak, **D. Vrinceanu** and K. Chilakamarri
International Journal of Computational Science and Engineering **9**, 214 (2013)

58. *Directed search for continuous gravitational waves from the Galactic center*
by J. Aasi et al. (LIGO Scientific Collaboration and Virgo Collaboration)
Physical Review D **88**, 102002 (2013)

57. *Enhanced Frequency Resolution in Data Analysis*
by L. Perotti, **D. Vrinceanu** and D. Bessis
American Journal of Computational Mathematics **3**, 242 (2013)

56. *Rapidly Converging Bound State Eigenenergies for the Two Dimensional Quantum Dipole*
by C. R. Handy and **D. Vrinceanu**
J. Phys. B **46**, 115002 (2013)

55. *Noise in the complex plane: open problems*
by D. Bessis, L. Perotti and **D. Vrinceanu**
Numerical Algorithms **62**, 559 (2013)

54. *Orthogonal polynomial projection quantization: a new Hill determinant method*
by C. R. Handy and **D. Vrinceanu**
J. Phys. A **46**, 135202 (2013)

53. *Beyond the Fourier Transform: Signal Symmetry Breaking In the Complex Plane*
by L. Perotti, **D. Vrinceanu** and D.Bessis
IEEE Signal Processing Letters **19**, 865 (2012)

52. *Minority Student Involvement in Computational Science Research at Texas Southern University*
by M. F. Khan, **D. Vrinceanu**, K. Chillakamarri and C. J. Tymczak
in "Proceedings of the 1st Conference of the Extreme Science and Engineering Discovery Environment: Bridging from the eXtreme to the Campus and Beyond", edited by C. Stewart(2012)

51. *Computing high precision Matrix Pade approximants*
by B. Beckermann, D. Bessis, L. Perotti and **D. Vrinceanu**
Numerical Algorithms **61**, 189 (2012)

50. *Angular momentum changing transitions in proton-Rydberg hydrogen atom collisions*
by **D. Vrinceanu**, R. Onofrio and H. R. Sadeghpour
Astrophysical Journal **747**, 56 (2012)

49. *Surface Plasmon Resonances of Clustered Nanoparticles*
by T. Sandu, **D. Vrinceanu** and E. Gheorghiu
Plasmonics **6**, 407 (2011)

48. *Spin polarization transfer in ground and metastable helium atom collisions*
by **D. Vrinceanu** and H. R. Sadeghpour
New Journal of Physics **12**, 065039 (2010)

47. *Linear dielectric response of clustered living cells*
by T. Sandu, **D. Vrinceanu** and E. Gheorghiu
Physical Review E **81**, 021913 (2010)

46. *Rydberg atom formation in ultracold plasmas: non-equilibrium dynamics of recombination*
by **D. Vrinceanu**, H. R. Sadeghpour and T. Pohl
Journal of Physics: Conference Series **194**, 012067 (2009)

45. *Long-range interaction between ground and excited state hydrogen atoms*
by **D. Vrinceanu** and A. Dalgarno
J. Phys. B **41**, 215202 (2008)

44. *The King model for electrons in a finite-size ultracold plasma*
by **D. Vrinceanu**, G. S. Balaraman and L. A. Collins
J. Phys. A **41**, 425501 (2008)

43. *Rydberg atom formation in ultracold plasmas: Small energy transfer with large consequences*
by T. Pohl, **D. Vrinceanu**, and H. R. Sadeghpour
Phys. Rev. Lett. **100**, 223201 (2008)

42. *Long-range interactions for two He (2P) atoms: accurate results for He(2^1P)–He(2^1P), He(2^1P)–He(2^3P), and He(2^3P)–He(2^3P) for like isotopes*
by J.-Y. Zhang, Z.-C. Yan, **D. Vrinceanu**, J. F. Babb, and H. R. Sadeghpour
Physical. Rev. A **76**, 012723 (2007)

41. *A theoretical survey of formation of antihydrogen atoms in a Penning trap*
by **D. Vrinceanu**
in "Atomic processes in Plasmas: 15th APS Topical Conference", edited by J. D. Gillaspy, J. J. Curry and W. L. Wiese(2007)

40. *Numerical solution of perturbed Kepler problem using a split operator technique*
by G. S. Balaraman and **D. Vrinceanu**
Physics Letters A **369**, 188 (2007)

39. *Superadiance in ultracold Rydberg atoms*
by T. Wang, S. F. Yelin, R. Cote, E. E. Eyler, S. M. Farooqi, P. L. Gould, M. Kostrun, D. Tong and **D. Vrinceanu**
Physical. Rev. A **75**, 033802 (2007)

38. *Long-range interactions for He(nS) – He(n'S) and He(nS) – He(n'P)*
by J.-Y. Zhang, Z.-C. Yan, **D. Vrinceanu**, J. F. Babb, and H. R. Sadeghpour
Physical. Rev. A **74**, 014704 (2006)

37. *Equivalent multipole operators for degenerate Rydberg states*
by V. N. Ostrovsky, **D. Vrinceanu** and M. R. Flannery
Physical. Rev. A **74**, 022720 (2006)

36. *Long-range interactions between a He(2^3S) and a He(2^3P) atom for like isotopes*
by J.-Y. Zhang, Z.-C. Yan, **D. Vrinceanu**, H. R. Sadeghpour and J. F. Babb
Physical. Rev. A **73**, 022710 (2006)

35. *Computational techniques for probing matter at extreme conditions*
by S. Hu, **D. Vrinceanu**, L. Collins, B. Schneider
Lecture Series on Computer and Computational Sciences **4A-4B**, 1118 (2005)

34. *Formation of anti-hydrogen atoms and ions in a strongly magnetized plasma: A Molecular Dynamics Simulation*
by **D. Vrinceanu**, S. X. Hu, S. Mazevet and L. A. Collins
Physical. Rev. A **74**, 042503 (2005)

33. *Molecular dynamics simulations of cold antihydrogen formation in strongly magnetized plasmas*
by S. X. Hu, **D. Vrinceanu**, S. Mazevet and L. A. Collins
Phys. Rev. Lett. **95**, 163402 (2005)

32. *Electron impact ionization of Rydberg atoms*
by **D. Vrinceanu**
Physical. Rev. A **72**, 022722 (2005)

31. *Anisotropic van der Waals coefficients for He(1^1S) - He(2^3P)*
by J. Y. Zhang, Z. C. Yan, **D. Vrinceanu** and H. R. Sadeghpour
Physical. Rev. A **71**, 032712 (2005)

30. *Long-range interaction between polar Rydberg atoms*
by V. N. Ostrovsky, M. R. Flannery, **D. Vrinceanu** and N. V. Prudov
J. Phys. B **38**, S279 (2005)

29. *Electron-impact broadening of Sr^+ lines in ultracold neutral plasmas*
by **D. Vrinceanu**, H. R. Sadeghpour and K. Bartschat
J. Phys. B **37**, L371 (2004)

28. *Strongly magnetized antihydrogen and its field ionization*
by **D. Vrinceanu**, B. E. Granger, R. Parrott, H. R. Sadeghpour, L. Cederbaum, A. Mody, J. Tan and G. Gabrielse
Phys. Rev. Lett. **92**, 133402 (2004)

27. *Pressure Broadening and Shift of He($2^3P_{2,1,0}$) - He(2^3S) lines*
by **D. Vrinceanu**, S. Kotochigova and H. R. Sadeghpour
Physical. Rev. A **69**, 022714 (2004)

26. *The variable phase method used to calculate and correct scattering lengths*
by H. Ouerdane, M. J. Jamieson, **D. Vrinceanu** and M. J. Cavagnero
J. Phys. B **36**, 4055 (2003)

25. *Quantal and Classical Radiative Cascade in Rydberg Plasmas*
by M. R. Flannery and **D. Vrinceanu**
Physical. Rev. A **68**, 030502(R) (2003)

24. *Stark mixing in Rydberg atoms by ultralow energy collisions with ions*
by M. R. Flannery and **D. Vrinceanu**
International Journal of Mass Spectroscopy **223**, 473 (2003)

23. *Stark Mixing in Dissociative Recombination*
by M. R. Flannery and **D. Vrinceanu**
in "Dissociative recombination: theory, experiment, and applications", edited by S. Guberman(2002)

22. *He(1^1S) - He(2^3S) collision and radiative transition at low temperatures*
by **D. Vrinceanu** and H. R. Sadeghpour
Physical. Rev. A **65**, 062712 (2002)

21. *Classical and Quantal atomic Form Factors for (nlm $\rightarrow$ n'l'm) transitions*
by M. R. Flannery and **D. Vrinceanu**
Physical. Rev. A **65**, 022703 (2002)

20. *Exchange Forces in Dispersion Relations Investigated Using Circuit Relations*
by **D. Vrinceanu**, A. Z. Msezane, D. Bessis and A. Temkin
Phys. Rev. Lett. **86**, 3256 (2001)

19. *Exact Quantal Collisional Stark Mixing probabilities*
by **D. Vrinceanu** and M. R. Flannery
J. Phys. B **34**, L1 (2001)

18. *Classical and Quantal Stark Mixing at ultralow collision energies*
by **D. Vrinceanu** and M. R. Flannery
Physical. Rev. A **63**, 032701 (2001)

17. *Quantal Stark Mixing at ultralow collision energies*
by **D. Vrinceanu** and M. R. Flannery
J. Phys. B **33**, L721 (2000)

16. *Calculation of Regge Pole trajectories for singular potentials: an analytic approach*
by D. Bessis, **D. Vrinceanu**, Z. Felfli and A. Z. Msezane
in "Proceedings of the First International Workshop on "Contemporary Problems in Mathematical Physics", Cotonou, Republic of Benin, 31 October - 5 November 1999", edited by J. Govaerts, M. N. Hounkonnou and W. A. Lester, Jr.(2000)

15. *Classical Stark Mixing at ultralow collision energies*
by **D. Vrinceanu** and M. R. Flannery
Phys. Rev. Lett. **85**, 4880 (2000)

14. *Pade reconstruction of Regge poles from scattering matrix data for chemical reactions*
by **D. Vrinceanu**, A. Z. Msezane, D. Bessis, J. N. L. Connor and D. Sokolovski
Chem. Phys. Lett. **324**, 311 (2000)

13. *Quantal-classical correspondence impulse theory*
by M. R. Flannery and **D. Vrinceanu**
Phys. Rev. Lett. **85**, 1 (2000)

12. *Analytical accurate Regge trajectories calculation for singular potentials*
by **D. Vrinceanu**, A. Z. Msezane and D. Bessis
Physical. Rev. A **62**, 022719 (2000)

11. *Recombination at ultra Cold Energies*
by M. R. Flannery and **D. Vrinceanu**

in "Dissociative recombination: theory, experiment, and applications: proceedings of the fourth international conference: Stockholm archipelago, Sweden, 16-20 June 1999", edited by M. Larsson, J. Brain, A. Mitchell and I. F. Schneider(1999)

10. *A new expansion in $\hbar$: accurate calculations of Regge trajectories for singular potentials*
by **D. Vrinceanu**, A. Z. Msezane and D. Bessis
Chem. Phys. Lett. **311**, 395 (1999)

9. *Classical and quantal atomic form factors for arbitrary transitions*
by **D. Vrinceanu** and M. R. Flannery
Physical. Rev. A **60**, 1053 (1999)

8. *The classical atomic form factor*
by **D. Vrinceanu** and M. R. Flannery
Phys. Rev. Lett. **82**, 3412 (1999)

7. *Radiative transitions and van der Waals coefficient for francium*
by M. Marinescu, **D. Vrinceanu** and H. R. Sadeghpour
Physical. Rev. A **58**, R4259 (1998)

6. *Recombination at ultra-low Energies*
by M. R. Flannery and **D. Vrinceanu**
in "Atomic processes in Plasmas: 11th APS Topical Conference", edited by E. Oks and M. S. Pindzola(1998)

5. *Electron wave filters from inverse scattering theory*
by D. Bessis, G. Mantica, G. A. Mezincescu and **D. Vrinceanu**
Europhysics Lett. **37**, 151 (1997)

4. *Lie symmetry group for 1+1 dimensional ultrarelativistic fluid dynamics*
by C. Alexa and **D. Vrinceanu**
Romanian Journal of Physics **41**, 207 (1996)

3. *Shape effects on the dielectric behaviour of arbitrarily shaped particles with particular reference to biological cells*
by **D. Vrinceanu** and E. Gheorghiu
Bioelectrochemistry and Bioenergetics **40**, 167 (1996)

2. *Q-Creation and Annihilation Tensors for the Two Parameters Deformation of U(su(2))*
by R. W. Wehrhahn and **D. Vrinceanu**
DESY preprint **93-042**, no page (1993)

1. *A q-tensorial approach to q-oscillators in U_q(su(2))*
by **D. Vrinceanu**, M. Stroila and A. Ludu
J. Phys. A **26**, L629 (1993)

▽ INVITED TALKS (back to index page)

- ◇ Building up R programming skills while learning Elementary Statistics, AWM Research Symposium, Clark-Atlanta University, September 2023
- ◇ Radiative Cascade in Rydberg atoms, University of Wisconsin - Milwaukee, March 2023

- ◇ High Energy Density Science Division Talk, Lawrence-Livermore National Laboratory, November 2016
- ◇ Department of Physics and Astronomy, Trinity University, San Antonio, TX, October 2014
- ◇ Department of Physics and Astronomy, University of Kentucky, March 2014
- ◇ Division of Atomic, Molecular and Optical Physics (DAMOP/APS) Meeting, Quebec City, Canada, June 2013
- ◇ Department of Physics Colloquium, Indiana University-Purdue University Indianapolis, March 2013
- ◇ Conference "Diaspora in Higher Education and Scientific Research of Romania", Bucharest, Romania, September 2012
- ◇ University of Rome, Rome, Italy, January 2012
- ◇ Army Research Lab Seminar, Adelphi, MD, May 2011
- ◇ Gravitational Wave Astronomy Seminar, University of Texas at Brownsville, February 2011
- ◇ Workshop on Ultracold Rydberg Physics, Recife, Brasil, November 2010
- ◇ Science and Engineering Festival, Austin, TX, October 2010
- ◇ International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Kalamazoo, MI, July 2009
- ◇ Department of Physics Seminar, Texas Southern University, April 2009
- ◇ Research Week, Texas Southern University, April 2009
- ◇ Physics Department Colloquium, Missouri Science and Technology University, February 2008
- ◇ International Conference on Atomic Processes in Plasmas (APiP), Gaithersburg, MD, March 2007
- ◇ Atomic and Molecular Group Seminar, RIKEN, Tokyo, Japan, December 2006
- ◇ Collisional Processes in X-Ray Emission and Antimatter Physics, Tokyo Metropolitan University, Tokyo, Japan, April 2006
- ◇ Cold and Ultra Cold Plasma and Rydberg Physics, ITAMP, Cambridge, Massachusetts, September 2005
- ◇ International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Rosario, Argentina, July 2005
- ◇ Theory of Ultracold Molecules, Telluride, Colorado, July 2005
- ◇ School of Physics Colloquium, Georgia Institute of Technology, February 2005
- ◇ Quantum Lunch Seminar, Theoretical Division, Los Alamos National Laboratory, November 2004
- ◇ Physics Department Seminar, University of Kentucky, January 2004
- ◇ Gaseous Electronics Conference (GEC/APS), San Francisco, October 2003
- ◇ Physics Seminar Series, University of Connecticut, October 2002
- ◇ Division of Atomic, Molecular and Optical Physics (DAMOP/APS) Meeting, College of William and Mary, Williamsburg, Virginia, May 2002
- ◇ Center for Ultracold Atoms (CUA) Colloquium, Massachusetts Institute of Technology, February 2002
- ◇ Harvard - ITAMP joint seminar, Cambridge, Massachusetts, October 2001
- ◇ School of Physics Colloquium, Georgia Institute of Technology, November 2000
- ◇ Conference "Dynamic Systems and Applications", Atlanta, Georgia, May 1999
- ◇ Centre de Physique Theorique (CPT), University of Marseille, France, September 1996
- ◇ Workshop "Two dimensional Quantum Field Theory", Vienna, Austria, March 1993

▽ PROFESSIONAL MEETINGS AND CONFERENCES (back to index page)

- ◇ CATMIN III: Frontiers in Rydberg Physics: From few-body interactions to many-body quantum simulations - poster contribution, University City College London, UK (July 2023)
- ◇ DAMOP Meeting - poster contribution, Spokane, WA (June 2023)
- ◇ 2019 SAGE/GAGE Workshop: Earth in 4D: Bridging the Timescales in Dynamic Earth Processes - oral contributions, Portland, OR (October 2019)
- ◇ ICPEAC XXXI - poster contributions, Deauville, France (July 2019)
- ◇ DAMOP Meeting - poster contributions, Milwaukee, WI (May 2019)
- ◇ Workshop of Mission-critical Big Data Analytics - poster contributions, Prairie View TX (April 2019)
- ◇ DAMOP Meeting - poster contributions, Fort Lauderdale, FL (June 2018)
- ◇ American Astronomical Society Meeting - oral contributions, Washington, DC (January 2018)
- ◇ Damop Meeting - oral contributions, Sacramento, CA (June 2017)
- ◇ Damop Meeting - oral contributions, Providence, Rhode Island (May 2016)
- ◇ National Technical Association - oral contributions, Texas Southern University, TX (November 2015)
- ◇ DAMOP Meeting - contributed talks, Columbus, OH (June 2015)
- ◇ HBCU-UP/CREST PI/PD Meeting - two posters, Whashington, DC (Feb 2015)
- ◇ Texas Academy of Science Meeting - contributed talks, San Antonio, TX (March 2015)
- ◇ DAMOP Meeting - contributed talks, Madison, WI (June 2014)
- ◇ Joint Fall Meeting of the Texas Sections of the APS, AAPT, and SPS - two contributed talks, Brownsville, TX (October 2013)
- ◇ DAMOP Meeting - contributed talk, Annaheim, CA (June 2012)
- ◇ Joint Fall 2009 Meeting of the Texas Sections of the APS, AAPT, and SPS - contributed talk, Commerce, TX (October 2011)
- ◇ DAMOP meeting - poster, Atlanta, GA (May 2011)
- ◇ Hydrogen Cosmology Workshop - poster, ITAMP Harvard Smithsonian Center for Astrophysics (May 2011)
- ◇ DAMOP meeting - poster, Houston, Texas (May 2010)
- ◇ LIGO-Virgo Gravitational Waves meeting - N/A, MIT, Boston, Massachusetts (December 2009)
- ◇ Joint Fall 2009 Meeting of the Texas Sections of the APS, AAPT, and SPS - two contributed talks, Texas State University, San Marcos, Texas (September 2009)
- ◇ Workshop ”Cold and Ultracold Plasma and Rydberg Physics II” - poster, ITAMP Harvard Smithsonian Center for Astrophysics (September 2009)
- ◇ DAMOP Meeting - poster, University of Virginia, Charlottesville, Virginia (May 2009)
- ◇ International Workshop on Non-Neutral Plasmas - poster, Columbia University, New York (June 2008)
- ◇ DAMOP Meeting - 1 poster, 1 contributed talk, Penn State, State College, Pennsylvania (May 2008)
- ◇ DAMOP Meeting - poster, Calgary, Alberta, Canada (June 2007)
- ◇ DAMOP Meeting - 2 posters, Knoxville, Tennessee (May 2006)
- ◇ DAMOP Meeting - 2 posters, 1 contributed talk, Lincoln, Nebraska (May 2005)
- ◇ DAMOP Meeting - 3 posters, 1 contributed talk, Tucson, Arizona (May 2004)
- ◇ ICPEAC - 3 posters, Stockholm University, Sweeden (July 2003)
- ◇ DAMOP Meeting - 4 posters, U of Colorado, Bolder, Colorado (May 2003)
- ◇ International Conference on Atomic Physics (ICAP) 2002 - 2 posters, MIT, Boston, Massachusetts (July 2002)

- ◇ DAMOP Meeting - 2 posters, College of William and Mary, Williamsburg, Virginia (May 2002)
- ◇ ICPEAC - 2 posters, Santa Fe, New Mexico (July 2001)
- ◇ DAMOP Meeting - 3 posters, London, Ontario (May 2001)
- ◇ DAMOP Meeting - poster, University of Connecticut, Connecticut (June 2000)
- ◇ Gordon Research Conference, "Dynamics of Simple Systems in Chemistry and Physics" - poster, Salve Regina University, Newport, Rhode Island (July 1999)
- ◇ APS Centennial Meeting - 3 posters, Atlanta, Georgia (March 1999)
- ◇ GEC Meeting - 3 posters, Maui, Hawaii (October 1998)
- ◇ DAMOP Meeting - 2 posters, Santa Fe, New Mexico (June 1998)
- ◇ Atomic Processes in Plasmas - coauthor of an invited talk, Auburn, Alabama (March 1998)
- ◇ Molecular Ion Physics Workshop - poster, ORNL, Oak Ridge, Tennessee (February 1998)
- ◇ Workshop on Collisions of Cold, Trapped Atoms - poster, Boulder, Colorado (November 1997)
- ◇ APS Meeting - poster, Washington DC (April 1997)
- ◇ International Workshop in Impedance Tomography - poster, Heidelberg, Germany (September 1995)
- ◇ Summer School "Collective Motion in Nuclear Physics" - None, Predeal, Romania (August 1995)
- ◇ Winter School "Two dimensional Quantum Field Theory" - None, Schladming, Austria (March 1995)
- ◇ 11th International Biophysics Congress - poster, Budapest, Hungary (July 1993)
- ◇ Workshop "Interfaces between Physics and Mathematics" - poster, Vienna, Austria (March 1992)

▽ OTHER RESEARCH PRODUCTS (back to index page)

- ◇ **Book (Cognella)** : Elementary Statistics, A guide to data analysis using R (2022), ISBN: 978-1-7935-5550-2
- ◇ **Zenodo research repository** : Plasma MDQT Simulation: the first release (2019), doi:10.5281/zenodo.1471776 https://doi.org/10.5281/zenodo.3477605
- ◇ **Zenodo research repository** : Lmixing: the first release (2018), doi:10.5281/zenodo.1471776
- ◇ **United States Patent** : Metaloboranes for high density hydrogen storage (2018), US10125151B2

▽ REFERENCES LETTERS MAY BE OBTAINED FROM: (back to index page)

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