SURAJIT SEN

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Current Position

Professor of Physics, State University of New York at Buffalo

Education

University of Georgia, Athens, GA
`Ph.D (Physics),` December 1989 (awarded March 1990),
Thesis: *Transverse dynamics of the Ising model in D dimensions*, Advisor: M. Howard Lee, *deceased*
Presidency College, Calcutta, India
`B.Sc(Hons)`, First class, Physics, 1982 (degree awarded 1983)

Current Research Interests

- Dynamics of strongly nonlinear, non-integrable systems
- Studies of non-convergent series
- Dust and gas flow at nanoscale through orifices via Molecular Dynamics
- Studies on time evolution in societal systems
- Developing Open, online, homework systems in Physics

Employment History

Senior Science Advisor & Jefferson Science Fellow of the US National Academy of Sciences, United States Agency for International Development, Washington, DC, 2020-2021

State University of New York at Buffalo
Professor, 2006-Present (on leave 2020-2021)
Associate Professor, 2000-2006
Assistant Professor, 1994-2000

State University of New York at Buffalo
Research Assistant Professor, 1993-1994

University of Rochester
Research Specialist (Courtesy) 1993-1994

Michigan State University
Research Assistant Professor 1992-1993
Research Associate, Center for Fundamental Materials Research & Department of Physics & Astronomy, 1990-1992 (with Prof S.D. Mahanti, now Emeritus)

University of Minnesota, Minneapolis
Postdoctoral Research Fellow, School of Physics (1989-1990) (with Prof J.W Halley)

Co-Founder, Director & Chief Technology Officer, eVibe Power Inc., Williamsville, NY & River Edge, NJ (2012-2014)

Adjunct & Visiting Professorships

1. Indian Institute of Engineering, Science and Technology, Howrah, India
   Visiting Professor of Physics (2017-2018)

2. Brock University, St. Catharines, Ontario, Canada
   Adjunct Professor of Physics (2014-2019)

3. State University of New York College at Buffalo
   Adjunct Professor of Mathematics (2009-2012)

4. Universidade de Santiago de Chile
   Invited Visiting Professor of Physics (12/2003)

Other Academic Visits

1. Jefferson Science Fellow of the US National Academy of Sciences, Engineering and Medicine and Senior Science Advisor at the Bureau for Development, Democracy, and Innovation, Local, Faith, and Transformative Partnerships Hub, Locally-Led Developments Initiative, United States Agency for International Development, August 2020 - August 2021.

2. Fulbright-Nehru Fellow at the Indian Institute of Engineering, Science and Technology, Shibpur, India (Magnetic chains, nanoparticles and other nonlinear dynamics problems, experiment-theory collaboration with Professor Minhaz Hossain) 6-8/2017 and 5-8/2018

3. Research Visit, Department of Mechanical & Industrial Engineering, Department of Mathematical Sciences, New Jersey Institute of Technology (Repelling magnets in a chain with Professors A.D. Rosato & Denis Blackmore) 12/2015

4. Research Visit, CSIR 4^{th} Paradigm Institute, Bangalore, India (Impact absorption with Professor V.K. Gaur & Dr T.R.K. Mohan) 10/2015

5. Research Visit, Department of Physics, Indian Institute of Engineering, Science & Technology, Kolkata (Mechanical energy transport in nanoparticles with Prof S.M. Hossain) 10/2015

6. Research Visit, Ecole Polytechnique, Paris, France (Sociophysics - studies of battles and terrorist attacks with Prof Serge Galam) 9/2012

7. Research visit, CSIR Centre for Mathematical Modeling and Computer Simulations, Bangalore, India (Mentoring and guiding the CSIR scientists to work on impact absorption using granular materials with Dr. T.R. Krishna Mohan) 6/2010, 6/2011, 7/2012

8. Research visit, Department of Chemistry and Biochemistry and Department of Mechanical and Aerospace Engineering, University of California at San Diego (Granular Dynamics with Professor Katja Lindenberg and Professor Vitali F. Nesterenko) 10/2008

9. Research visit, Department of Applied Physics and Graduate Aeronautics Laboratory & Department of Mechanical Engineering, California Institute of Technology, Pasadena (Granular potentials, granular metamaterials with Professor Chiara Daraio and Professor Christopher Brennen) 10/2008

10. Research visit, Physique, Université de Paris - Est, Marne la Valleé, France (Acoustics of granular media with Professor Xiaoping Jia) 9/2008

11. Visiting Scholar, Asia-Pacific Centre for Theoretical Physics, Seoul, South Korea (Solitary waves in granular materials, landmine detection with Professor Jongbae Hong) 8/1997

Honors and Awards

1. Selected for the Jefferson Science Fellowship of the National Academy of Sciences, January 2020.

2. Hind Rattan Award of the NRI Welfare Society of India, Bangkok, Thailand, January 8, 2018 (unable to attend in person)

3. Fulbright-Nehru Academic and Professional Excellence Fellow, Indian Institute of Engineering, Science and Technology, Shibpur, West Bengal, India 2017-2018.

4. Fellow, American Association for the Advancement of Science, Citation: *For pioneering research on solitary waves and their collisions in granular media and for sustained outstanding service and leadership in international physics* 2012

5. Named by Dean Maureen Grasso of the Graduate School, The University of Georgia, as a *UGA graduate degree holder who exemplifies the intellectual legacy of our university* 2009

6. Fellow, American Physical Society, Citation: *For the discovery of how solitary waves break and secondary solitary waves form in granular media, for his leadership in organizing forums to represent and recognize the physicists from India and for raising consciousness about the problems and the importance of rural science education in India and the developing world* 2008

7. Theoretical Physics Seminar Circuit (TPSC) Lecturer at Benares Hindu University, December, 2007

8. SUNY Chancellor's First Patent Award (Albany, NY). To recognize work on developing an acoustic impulse based approach to detecting buried anti-personnel landmines in war inflicted regions of the world. 2003

9. Nominated for the Inventor of the Year Award by Niagara Frontier Intellectual Property Law Association and Technical Societies Council of the Niagara Frontier, 2003

10. Named one of the top 100 innovators of Western New York (Invited to Upstate Alliance for Innovation), 2001

11. National Scholarship, Government of India, 1977 & 1979

Professional Memberships

1. Member, American Physical Society

2. Member, American Association for the Advancement of Science

3. Member, American Association of Physics Teachers

4. Life Member, American Chapter of the Indian Physics Association

Editorial Experience

1. Review Editor and Editorial Board Member, Frontiers in Physics (April 2021-Present)

2. Editor and Editorial Board Member, Granular Matter (Springer Nature) (January 2020 - Present)

3. Editor, *Proceedings of the Workshop on Nonlinear Dynamics of Many Body Systems*, Buffalo, New York, International Journal of Modern Physics B, Vol. 31, No. 10 (20^{th} April 2017)

4. Editor/Editorial Board Member, International Journal of Modern Physics B (World Scientific) & Editor/Editorial Board Member, Modern Physics Letters B (World Scientific) (2004-Present)

5. Editor, Newsletter of the American Chapter of the Indian Physics Association (2005-2011)

6. Associate Editor for Physics, Multimedia Educational Resource for Learning and Online Teaching (MERLOT, https://www.merlot.org/merlot/index.htm), SUNY representative to Physics board of MERLOT project (2002-2010)

7. Surajit Sen, Melany L. Hunt and Alan J. Hurd, Editors, *Granular Material Based Technologies*, Materials Research Society Symposium Proceedings Volume 759 (Materials Research Society, Warrendale, PA, 2003).

8. Surajit Sen, Jongbae Hong and Michio Tokuyama, Editors, *Proceedings of the International Symposium on Slow Dynamical Processes in Nature*, Physica A Vol. 315 (special issue), November 15, 2002

9. Surajit Sen and Melany Hunt, Editors, *The Granular State*, Materials Research Society Symposium Proceedings Volume 627 (Materials Research Society, Warrendale, PA, 2001)

Conference Organization

1. Organizer (Surajit Sen, Luca Guiggioli and Mukesh Tiwari), *NITANTFEST*, an international conference to celebrate the scientific contributions of Professor V M (Nitant) Kenkre, July 17-18, 2021 (online).

2. Organizer, American Physical Society, Invited Symposium on Teaching Gateway Physics Courses: An International Perspective (speakers: David Helfand, Jason Hafner, Mulugeta Bekele, S. Minhaz Hossain and Dr Dan Siegel, NYT Best Seller & Psychiatrist), Los Angeles, CA, March 2018

3. Organizer, Physics at the Falls Series, Nonlinear Dynamics of Many Body Systems, SUNY Buffalo (invited speakers from 8 countries) April 1-3, Buffalo, 2016

4. Organizer, American Physical Society, Invited Symposium on Biological Physics (speakers: A. Liu, J. Banavar, M. Cieplak, J. Jose), March Meeting, Pittsburgh, PA, 2009

5. Member of the Executive Committee, Powders and Grains 2009 (primary international conference on the science and engineering of granular media), Golden, CO, 2005-2009

6. Member of the Organizing Committee, MERLOT International Conference, San Jose, CA 2009

7. Member of the Organizing Committee, MERLOT International Conference, St. Paul, MN, 2008

8. Co-organizer of Jainfest: A Conference to Honor the Contributions of Professor Piyare L. Jain, SUNY, Univ at Buffalo, October 19-20, 2006

9. Workshop on Development of Plans for Resource Building for Rural Science Teachers, New Delhi, India, August 23, 2005

10. Member, International Advisory Panel, International Silk Road Conference on Quantum Theory, Partial Differential Equations of Mathematical Physics and their Applications, Tashkent, Uzbekistan, Sept 30-Oct 3, 2003

11. Organizer (with Prof. Vinod K. Gaur of Indian Inst. of Astrophysics) of Indo-US Workshop on Peer-Reviewed Online K-12 $(10+2)$ Science Education (PROKSE), July 17-20 at the National Environmental Engineering Research Institute, Nagpur, Maharashtra, India, 2003

12. Lead organizer (with Dr. Andrew M. Sessler of Lawrence Berkeley Laboratories), Humanitarian Demining Symposia in American Physical Society, April 3-7, 2003

13. Lead organizer (with Prof. Melany L. Hunt of California Institute of Technology and Dr. Alan J. Hurd of Los Alamos National Laboratories) of Symposium MM: Granular Material Based Technologies, Fall 2002 Materials Research Society Meeting in Boston, MA, December, 2002

14. Invited by the Asia-Pacific Center for Theoretical Physics (Seoul, Korea) to be the Lead organizer (with Prof. J. Hong of Seoul National University, Korea and Prof. M. Tokuyama of Tohoku University, Japan) of International Symposium on Slow Dynamical Processes in Nature (November 25-27), 2001

15. Organizer (with Prof. Melany L. Hunt of California Institute of Technology) of Symposium BB: The Granular State, in the Spring 2000 Meeting of Materials Research Society in San Francisco, CA between April 24 and 27, 2000

16. Member, Advisory Committee for the International Workshop on Granular Physics: Statics, Excitations and Dynamics, Organized by the Center for Advanced Studies, The University of New Mexico, Sandia National Laboratories and Los Alamos National Laboratory, Albuquerque, NM, 1998

Service to the Profession

1. Organizer of the Statistical and Nonlinear Physics Lecture Series @ SUNY Buffalo - Online lecture series run as a live event to a global audience, June 2020 - Present

2. Committee Member (by Invitation), Scholarship Committee, State-wide Committee of the United University Professions, Albany, New York, August 2019-Present

3. Committee Member (by Invitation) & Chair (by election), Campus Professional Development Committee, New York State/United University Professions Joint Labor-Management Committees, February 2019-March 2020

4. Panelist, National Science Foundation Site Visit Team for the University of Chicago MRSEC 4^{th} Year Evaluation, May 2018

5. Member-at-Large, Executive Committee, Forum on International Physics, American Physical Society (elected) 2016-2018
   Member, APS Fellowship Committee, APS Forum on International Physics, 2016-2018
   Member & Chair, Distinguished Student Award Committee, APS Forum on International Physics, 2017-2018

6. Member, Committee on International Freedom of Scientists, American Physical Society, 2015-2017 (appointed by the President of APS),
   Member, American Physical Society Sakharov Prize Committee, 2017

7. Member, Nomination Committee, Forum on International Physics, American Physical Society, 2014-2015

8. Member of the Board, Indo-US Consortium for Engineering Education (IUCEE), 2013-Present

9. Elected Member, American Physical Society Committee on International Scientific Affairs (CISA), 2007-2009

10. Member of the Selection Committee of the American Physical Society Beller and Marshak Lectureship Awards (these awards are recognized worldwide for the distinction they bring), 2007-2011

11. Member of the US Selection Panel of the APS-Indo-US Science and Technology Forum Travel Grant Program. Helped introduce this program and draft its guidelines, 2007-2013

12. Elected President, American Chapter of Indian Physics Association (ACIPA), 2005-2011. ACIPA is a professional society that represents physicists of Indian origin in North America. ACIPA recognizes outstanding achievements through highly competitive and prestigious prizes, and fosters close linkages between the US based physicists of Indian origin and those in India. ACIPA is an affiliate of the APS, Forum on International Physics

13. Chair, American Physical Society Kilambi Ramavataram Fellowship Fund. This fund partially supports an Indian college level physics faculty member to undergo advanced training in physics teaching in the US for one academic year. As Chair, I oversee the Fellow selection process and raise funds and negotiate arrangements with host institutions, 2001-Present

14. Panel Member, NASA Panel on Granular Flow, 2004

15. Consultant, American Physical Society Humanitarian De-mining Project. I worked with Late Dr Andrew M. Sessler, Director Emeritus of the Lawrence Berkeley Labs and Dr Irving Lerch of the APS to develop an APS study proposal. The proposal was endorsed by the APS Council but eventually not pursued because of lack of sponsors. During the course of this work I met with officials from the US Senate, the State Department, US Night Vision Command in Fort Belvoir, US Army Corps of Engineers and interviewed many science, technology and policy experts from US and abroad, 2002-2003

16. Lead Organizer and Indo-US Coordinator, Peer-Reviewed Online K-12 Science Education Project This an Indo-US project that I initiated with funding from the Indo-US Science and Technology Foundation ($38,000) and for which I volunteered my time. The work addresses scientific literacy needs of rural children in India. This effort oversaw the organization of an international conference held in Nagpur, India in 2003. It also established linkages with the American India Foundation, Bharat Gyan Vigyan Samiti, Eklavya, Azim Premji Foundation, Asha Foundation,

National Science Teachers Association (USA) and several US companies to enable access of high quality math and science teaching materials by rural Indian children with limited access to schools. Several undergraduates and graduate students from SUNY Buffalo had volunteered their time, 2003

17. Consultant, National Aeronautical and Space Administration (NASA) on dust flow in the International Space Station, 2003

18. Secretary, Executive Secretary & Newsletter Co-Editor, American Chapter of Indian Physics Association, 1991-1996, 1996-2000

United States Agency for International Development (USAID)

Advisor, DDI/LFT/LLDI, Local Sustainability Program, Monitoring, Learning and Evaluation research

Advsior, Youth Corps Office

Advisor, American Schools and Hospitals Abroad (ASHA)

SUNY Buffalo - Academic Service

University level

Member, Joint Promotion and Tenure Committee, School of Engineering and Applied Sciences and College of Arts and Sciences, SUNY Buffalo, 2016-2020

Member, Barry M. Goldwater Scholarship Committee, SUNY-Buffalo, 2007 - Present

Member of the Provost's General Education Committee (Gen Ed was fully overhauled in SUNY Buffalo), 2014

Member of the Integrative Theme Cluster of the Provost's General Education Committee, 2014

Member of the Council on International Studies and Programs (CISP) at SUNY-Buffalo (Council oversees all International Education related issues), 2000-2016
Chair, Committee on Faculty Communications, CISP, 2009-2013

Provost's Standing Committee on Assessment (SUNY Buffalo just went through a rigorous Middle States Review on Assessment, new policies have been implemented for evaluation of every course taught at the University), 2010-2014

Member, Provost's Task Force to plan the creation of a UB Institutional Repository, 2007-2009

Member, Technology Advisory Panel (Physical Sciences and Technology), Office of the Provost, SUNY, University at Buffalo, 2000-2002

Senator (Alternate) from the Department of Physics at the Faculty Senate, 1995-1996

College level

Elected Member, Elected Chair (2018-19) and Acting Chair (2017-18, 2019-20 when Chair was unavailable), College of Arts and Sciences Appointment, Promotion and Tenure Committee, 2015-2017, 2017-2020

Member, Curriculum Committee of the College of Arts and Sciences (appointed by the Dean), 2010-2012

Member, College of Arts and Sciences Dean's Panel on Research, 1999

Department level

Chair, Faculty External Recognition Committee (oversees the nomination process and dossier preparation of all of those nominated for awards internally and externally), 2013-Present

Member, Graduate Studies Committee, 1995-Present

Member, Qualifying Examination Committee, 2012-Present

Member, Promotion Committee II (Associate to Full, Full to Distinguished), 2006-Present

Member, Promotion Committee I (Assistant to Associate), 2000-Present

Member, Undergraduate Studies Committee, as a former member of the CAS Curriculum Committee (2010-2012) I worked closely with the Director of Undergraduate Studies on all departmental curriculum matters at the undergraduate level, 2002-2003, 2010-2015

Departmental committee to establish guidelines for research faculty appointments. 2014

Chair, Colloquium Committee, 2011

Outreach Committee Member and Co-host (with several colleagues), International Year of Astronomy celebrations in Physics Department, 2009

Chair, Biological Physics Search Committee, 2004-2005

Chair, Graduate Recruitment Committee, 2004-2006

Member, Physics Department Library Task Force, 2002

Member, Advisory Committee to the Chair, 1997-1999, 2002-2004

Chair, Outreach Committee, 1998-2004

Departmental Special Assignment, Physics in the 21^{st} Century Program, 1997-1998

Member, Alumni and Corporate Sponsors Committee, 1997-1998

Member, Computing Committee, 1996-1997

Chair, Seminar Committee, 1995-1997

Founder and Chair, Many Body Theory and Statistical Physics Seminar Series, 1994-Present

Coordinator, World Wide Web Project of the Physics Department, 1994-1996

Library Liaison between Department of Physics and the Science and Engineering Libraries, 1994-1995

Other University Service

Member, Nuclear Threat Endowed Lecture Committee, Dept of Political Science, SUNY - University at Buffalo, 2017-Present

Mathematics Search Committee, Dept of Mathematics at SUNY - University at Buffalo, 2012

Research Mentor, Erie County BOCES Program as Mentor to High School Scholars Melissa Judson (2008) and Emily Bowser (2009), 2008-2010

Geophysics Search Committee, Dept of Geological Sciences at SUNY - University at Buffalo, 2007-2008

Funded Grants and Current Activities

1. Sandia National Laboratories (Dept of Energy), BCS 5145, PI: Sen, Detection of buried UXO, 1/5/1998-30/4/2001, $ 27,159
2. National Science Foundation (CMS), CMS 00700055, PI: Sen, Impulse propagation in granular beds, 9/1/2000-8/31/2004, $ 186,000
3. NASA Subcontract through Colorado School of Mines, Mitigation of Dust and Electrostatic accumulation For Human and Robotic Systems for Lunar and Martian Missions, 8/1/2005-12/31/2006, $ 60,000 (This was a $15M project called "Project Dust" in which I had a $ 500,000 share from 2005-2010. President George W. Bush canceled $ 84M worth of projects due to cut backs to NASA in 2005 and ours was one of the big projects that was cut).
4. US Army Research Office, W911F051410, The Study of Shock Mitigation Using Tapered Chain Armor Panels, 7/22/2005-7/22/2007, $ 100,000
5. US Army Research Development & Engineering Command, W911NF0710448, Roles of Intelligence, Exposure, Strategy, and Weapons in Model Battles, 7/16/2007-1/21/2009, $ 48,262.95
6. US Army Research Development & Engineering Command, W911NF0810141, Computational Study of breathing-type processes in driven, confined granular alignments, 5/28/2008-9/30/2011, $ 210,000

7. National Science Foundation, CSUMS Grant, DMS 0802994, Computational Science Training for Undergraduates in the Mathematical Sciences (CSUMS): Undergraduate Research Groups for Experiences in Computational Sciences (URGE), Collaborative proposal between SUNY Buffalo and Buffalo State College with PIs J Ringland and J Carbonara and co-PIs Surajit Sen, E Bruce Pitman and Deborah Moore-Russo, 9/1/2008 and 8/31/2015 (on no cost extension until 8/2015,), $ 1.1M ($ 838,443 share for SUNY Buffalo)

8. US Army Research Office, W911NF1110437, Short Term Innovative Research Proposal on the Dynamics and Control of Mechanical Energy Propagation in Granular Systems, 2/8/2011-5/31/2012, $ 50,000

9. US Army Research Office, W911NF1310007, On the possibility of novel, thin, light-weight, shock absorptive and heat resistant materials, 12/5/2012-5/15/2014, $ 50,000

10. US Army Research Office, W911NF1410202, STIR: Stable intrinsic localized modes in microelectromechanical cantilever structures, 5/21/14-2/14/15, $ 50,000

11. Internal grant with E Mercado III on Sensor based analyses of student mental and physical health in gateway physics classes, $10,000, 5/31/2016-5/31/2017

12. US Department of State - Government of India through Fulbright-Nehru Fellowship, Nonlinear Dynamics of Many Body Systems with Potential Applications in Energy Channeling and Harvesting: Theory and Experiment, 6/27/2017-8/31/2018, $ 16,000 stipend and travel and living allowances (CURRENT)

13. SUNY-IITG Proposal - Development of a WeBWork based Free Online, Interactive Homework System for College Physics, submitted in March 2018 (with Alok Kumar at SUNY Oswego) (Funded by SUNY Open Educational Resources (OER) Program), $ 38,000, 8/1/2018-6/30/2019

14. OER Funding from SUNY Buffalo Libraries, $ 3,000 for introducing Open Educational Resources in Phy 101, 6/1/2018-6/30/2019

15. OER Funding from SUNY - Development of a WeBWork based Free Online, Interactive Homework System for College Physics (with Alok Kumar at SUNY Oswego), $ 40,000, 6/1/2019-5/31/2020 (extended due to COVID to 2022).

Books

M. Howard Lee and Surajit Sen, Statistical Mechanics (Cambridge University Press, under contract for submission in 8/2022)

Refereed Publications

1. Mukesh Tiwari, Xiguang Yang and Surajit Sen, Modeling the nonlinear effects of opinion kinematics in elections: A simple Ising model with random field based study, Physica A (submitted/revise-resub, 3/2021, 5/2021).

2. Luis Machado and Surajit Sen, Granular chains with fixed side decoration as impact protector and signals filter, Phys. Rev. E 103, 042904 (2021).

3. Amitava Datta, Peter Winkelstein and Surajit Sen, An agent-based model of spread of a pandemic with validation using COVID-19 data from New York State, Physica A (submitted, revise/resubmit 4/2021, 6/2021).

4. Nathaniel J Fuller and Surajit Sen, Localized Nonlinear Excitations in the β-Fermi Pasta Ulam Tsingou System, Chaos, Solitons & Fractals (submitted, 3/2021, revise/resubmit, 4/2021)

5. Rahul Kashyap and Surajit Sen, Rogue fluctuations in the strongly nonlinear Fermi-Pasta-Ulam-Tsingou chain, J Statistical Mechanics (submitted 5/2021).

6. Edgar Avalos, Amitava Datta, Anthony Rosato, Denis Blackmore and Surajit Sen, Dynamics in a confined mass-spring chain with 1/r repulsive potential: Strongly nonlinear regime, Physica A 553, 124651, 5^{th} May (2020).

7. Qianqian Wu, Xingyi Liu, Tengfei Jiao, Yannan Shen, Surajit Sen and Decai Huang, Head-on collision of solitary waves described by Toda lattice model in granular chain, Chinese Physics Letters 37, 074501 (2020).

8. Guo Deng, Gino Biondini, Surajit Sen, and Panayotis Kevrekidis, On the generation and propagation of solitary waves in integrable and non-integrable nonlinear lattices, European Physical Journal Plus 135, 598 (2020).

9. Guo Deng, Gino Biondini and Surajit Sen, Interactions of solitary waves in integrable and non-integrable lattices, Chaos (AIP) 30, 043101 (2020).

10. Nathaniel Fuller and Surajit Sen, Nonlinear normal modes in the β-Fermi-Pasta-Ulam-Tsingou chain, Physica A 553, 124283 (2/5/2020) https://doi.org/10.1016/j.physa.2020.124283.

11. Luis P S Machado and Surajit Sen, Decorated granular crystal as filter of low-frequency ultrasonic signals, Granular Matter 22:7, pp 1-6 (2020), published online in November 2019.

12. Rahul Kashyap and Surajit Sen, PULSEDYN - a dynamical simulation tool for studying strongly nonlinear chains, Computer Physics Communications 239, 134-149, June (2019). http://arxiv.org/abs/1710.09709

13. Luis P S Machado and Surajit Sen, Controlled energy dispersion in $2D$ decorated granular crystals, Physical Review E 98, 032907 (2018).

14. Alexandra Westley and Surajit Sen, Solitary waves and localized excitations in the strongly nonlinear β-Fermi-Pasta-Ulam-Tsingou chain, Europhysics Letters, 123, 30005 (2018).

15. Yoichi Takato, Michael Benson and Surajit Sen, Small nanoparticles, surface geometry and contact forces, Proc Royal Society London (A) 474 (2211), 20170723 (2018).

16. Michelle Przedborski, Surajit Sen and Thad A Harroun, The equilibrium phase in heterogeneous Hertzian chains, Journal of Statistical Mechanics: Theory and Experiment Journal of Statistical Mechanics: Theory and Experiment, 123204 (Dec, 2017).

17. Sourish Chakravarty and Surajit Sen, Characterization of solitary waves in a granular chain under short duration random loading, Granular Matter 20:42, pp 1-10 (2018)

18. Loris Magnani, Robert L. Anderson, Érica de Mello Silva, Surajit Sen and Jongbae Hong, *in People & History:* M. Howard Lee - The theorist made important contributions to statistical physics and the analysis of many-body problems, Physics Today, October 9 issue (2017)

19. Michelle Przedborski, Surajit Sen and Thad Harroun, Long term behavior of Hertzian chains between fixed walls is really equilibrium, International Journal of Modern Physics B 31, 1742011 (2017)

20. Rahul Kashyap, Alexandra Westley and Surajit Sen, Early time evolution of a localized nonlinear excitation in the β-FPUT chain, International Journal of Modern Physics B 31, 1742014 (2017)

21. Denis Blackmore, Anthony Rosato and Surajit Sen, Simulation, modeling and dynamical analysis of multibody flows, International Journal of Modern Physics B 31, 1742004 (2017)

22. Mukesh Tiwari, T.R. Krishna Mohan and Surajit Sen, Impact decimation using alignment of granular spheres, International Journal of Modern Physics B 31 1742012 (2017)

23. Alexandra Westley, Nicholas DeMeglio, Rebecca Hager, Jorge Mok, Linda Shanahan and Surajit Sen, Study of simple land battles using agent based modeling: strategy and emergent phenomena, International Journal of Modern Physics B, 31, 1742002 (2017)

24. Michelle Przedborski, Surajit Sen and Thad Harroun, Fluctuations in Hertz chains at equilibrium, Physical Review E 95, 032903 (2017)

25. Surajit Sen, T.R. Krishna Mohan and Mukesh Tiwari, Shock wave dispersion using 2D and 3D composite granular packing, Kona - Journal of Powder Technology 34, 248-257 (2017)

26. Denis Blackmore, Anthony Rosato and Surajit Sen, Magnetic point vortex dynamics in the plane, Proceedings of the International Congress on Theoretical and Applied Mechanics, Montreal, Canada (online, 2016)

27. Mukesh Tiwari, T.R. Krishna Mohan and Surajit Sen, Decorated granular layers for impact decimation, Granular Matter 18, 1-5 (2016)

28. Michelle Przedborski, Thad A. Harroun and Surajit Sen, Localizing energy in granular materials, Applied Physics Letters 107, 244105 (2015)

29. Michelle Przedborski, Thad A. Harroun and Surajit Sen, Granular chains with soft boundaries: slowing the transition to quasi-equilibrium, Physical Review E 91, 042207 (2015)

30. Yoichi Takato, Michael E Benson and Surajit Sen, Collision dynamics of soft and sticky nanoparticles, Physical Review E 92, 032403 (2015)

31. Han Ding, Matthew Westley and Surajit Sen, Energy fluctuations in the granular chain: possibility of rogue waves, Physical Review E 90, 032904 (2014)

32. Mukesh Tiwari, T.R. Krishna Mohan and Surajit Sen, Three dimensional DEM simulations of projectile impact on a granular medium, Physical Review E 90, 062202 (2014)

33. Yannan Shen, P.G. Kevrekidis, Surajit Sen and Aaron Hoffman, Characterizing traveling wave collisions in granular chains starting from integrable limits: the case of the KdV and the Toda lattice, Physical Review E 90, 022905 (2014)

34. Edgar Avalos and Surajit Sen, Granular chain between asymmetric boundaries and the quasi-equilibrium state, Physical Review E 89, 053202 (2014)

35. Matthew Westley, Surajit Sen and Anindya Sinha, Newtonian Chimpanzees: A molecular dynamics approach to understanding decision making by wild chimpanzees, In: Nature's Longest Threads: New Frontiers in the Mathematics and Physics of Information in Biology (eds. Balakrishnan J and Sreekantan BV), Chapter 8,

World Scientific Lecture Notes in Complex Systems. World Scientific, Singapore, 2014), pp 81-102.
(https://www.worldscientific.com/doi/abs/10.1142/9789814612470$_0$009)

36. William J Falls and Surajit Sen, Solitary wave propagation through 2D tree-like structures, Physical Review E, 89, 023209 (2014)

37. Yoichi Takato, Surajit Sen and Jeremy Lechman, Strong plastic deformation and softening of fast colliding nanoparticles, Physical Review E, 89, 033308 (2014)

38. Louiza Sellami, Robert W. Newcomb and Surajit Sen, Simulink modeling for circuit representation of granular chains, Modern Physics Letters B 27, 1350093 (10 pages) (2013)

39. Huang Decai, Lu Ming, Surajit Sen, Sun Min, Feng Yaodong, and Yang Anna, Spin Brazil-nut effect and its reverse in a rotating double-walled drum, European Physical Journal E 36, 41 (2013)

40. Diankang Sun and Surajit Sen, Grain-grain forces and the width of the solitary wave in granular chains, Granular Matter 15 (2), pp 157-161 (2013)

41. Yoichi Takato and Surajit Sen, Long-lived solitary waves in granular chains, Europhysics Letters 100, 24003 (2012)

42. Linda Shanahan and Surajit Sen, Agent based modeling of a surprise attack by intruders: can the defenders win? Modern Physics Letters B 25, pp. 2279-2287 (2011)

43. Taehyong Kim, Kang Li, Aidong Zhang, Surajit Sen and Murali Ramanathan, A computational model of mitigating disease spread in spatial networks, International Journal of Artificial Life Research 2, 77-94 (2011)

44. Alexander Breindel, Diankang Sun and Surajit Sen, Designing small cylindrical shock absorbers using granular alignments with inertial mismatch, Applied Physics Letters 99, 063510 (2011)

45. T.R. Krishna Mohan and Surajit Sen, Linearity stabilizes discrete breathers, Pramana J of Physics 77 (5), 975-986 (2011)

46. Edgar Avalos, Diankang Sun, R.L. Doney, and Surajit Sen, Sustained strong fluctuations in a nonlinear chain at acoustic vacuum: Beyond Equilibrium, Physical Review E 84, 046610 (2011)

47. Robert P. Simion and Surajit Sen, Energy transport through granular alignments: possible applications in energy extraction, Proc I Mech. Engg: Journal of Systems and Control Engineering (UK), vol. 225 (Pt 1), pp 522-529 (2011)

48. Linda Shanahan and Surajit Sen, Likelihood of success in competition for sustenance between species - a study of the two species problem using a stochastic approximation, Physica A 390, 1800-1810 (2011)

49. Diankang Sun, Chiara Daraio and Surajit Sen, Nonlinear repulsive force law between two solids with axial symmetry, Physical Review E 83, 066605-1-5 (2011)

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Papers on Physics Education

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2. M. Benedict, E. Debowska, S. Feiner-Valkier, R. Girwidz, L. Mathelitsch, I. Ruddock, E. Sassi, R. Sporken, T. Bradfield, B.Mason, T. Melder and S. Sen, Report and recommendations on available multimedia material for optics and waves, Proceedings of the XIV th European Workshop (MPTLXIV), Udine, Online Proceedings of the European Physical Society (2009)

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Intellectual Property Disclosures

1. Surajit Sen and Sourish Chakravarty, Nonlinear granular mechanical device to dynamically extract dissipated energy, Patent Conversion Treaty application (worldwide patent except for in the Arabian peninsula and a few countries), September, 2012

2. Surajit Sen and Sourish Chakravarty, Nonlinear granular mechanical device to dynamically extract dissipated energy, Provisional Patent applied for, September 2011 (Docket No. R-6667)

3. Surajit Sen and Steven P. Tozzi, Nonlinear energy harvesting bands to continuously absorb and extract energy from pressure fluctuations on roadways. Provisional Patent applied for, January 2012

4. Krishna Shenai, Nathan Jack, Supratik Mukhopadhyay, and Surajit Sen, Wireless sensor network for simplified and automated remote geophysical exploration, Intellectual property disclosure filed to Utah State University and to SUNY-Buffalo on February 15, 2007

5. Surajit Sen, Device and concept for novel shock absorbing structures, Provisional patent, Serial Number 60/411,361 (USPTO), File Number 11520.0283 (Hodgson Russ LLP), Docket number R-5698 (SUNY-Buffalo), filed on September 17, 2002. This invention was not pursued by SUNY for Non-provisional patent

6. Surajit Sen and Michael J. Naughton, System for detection of buried objects, U.S. Patent No. 6,418,081 (awarded, July 9, 2002)

Special Lectures

1. Lecture to physics freshmen at SUNY Oswego on Curiosity, Life and Physics, February 22, 2021.

2. Invited Panel Discussant in Indian Prime Minister Narendra Modi's VAIBHAV Summit on Complex Systems, October 10, 2020.

3. Lecture to physics freshmen at SUNY Oswego on Landmines and how to find them, delivered via Zoom on September 28, 2020.

4. Lecture at the Habitable Planet Workshop on *Science & Society*, Applied Centre for Climate and Earth Systems Science (ACCESS), Cape Town, program at the University of Fort Hare, South Africa, delivered via Skype, July 4, 2019.

5. Lecture at the Habitable Planet Workshop on *Science & Society*, Applied Centre for Climate and Earth Systems Science (ACCESS), Cape Town, program at the University of Johannesburg, South Africa, delivered via Skype, June 24, 2019.

6. Guest Lecture at Science Honor Society Induction Ceremony, Cheektowaga Central High School, Cheektowaga, New York, *Sand, Dirt and Sticky Stuff to the Frontiers of Physics*, March 26, 2019.

7. Science Today Lecture, State University of New York at Oswego, *Sand, Dirt and Sticky Stuff to the Frontiers of Physics*, October 10, 2018.

8. Public Lecture (audience mostly first year BSc-MSc students) at Indian Institute of Science Education and Research - Kolkata (IISER-Kolkata), *Sand, Dirt and Sticky Stuff to the Frontiers of Physics*, August 14, 2018

9. Public Lecture, Birla Industrial and Technological Museum, Kolkata, India, *Sand, Dirt and Sticky Stuff to the Frontiers of Physics*, June 26, 2018

10. Steel Institute Colloquium, Indian Institute of Technology, Bombay, India, *Nonlinear dynamics and the real world*, July 13, 2017

11. Public Lecture at Science & Art Cabaret event titled "Modularity" at the Hauptman-Woodward Medical Research Institute, Buffalo, NY, *On Sociophysics - Modeling battles, terrorism, and chimpanzee social behavior with rule-based dynamics*, January 30, 2013

12. Science Lecture at the Rotary Club International, Eastern Calcutta, India, *Grains and Shock Absorption: What Breakfast Cereal, Sand and Dirt has to do with the Frontiers of Modern Technology,* Nehru Children's Museum, Calcutta, August 8, 2012

13. Lecture at the Western New York Science and Technology Forum of SUNY-Buffalo, *Battles - Just What is Winning Anyway*, October 31. 2007

14. Provost's Summer Lecture, State University of New York at Buffalo, *Detection of Abandoned Land Mines*, June 5, 2003

15. Land Mine Lecture, Rotary Club International, Calcutta, India, *Detection of Abandoned Land Mines*, July 21, 2003

16. College of Arts and Sciences Featured Lecture, State University of New York at Buffalo, *Incorporating Nonlinearity: New Possibilities in Basic Science and High Technology*, October 2, 2002

17. Public lecture at the Western New York Science and Technology Forum of SUNY-Buffalo (The primary audience of this lecture was high school teachers) *Land mines*, January 5, 2000

18. Science Alumni Lecture, Faculty of Natural Science and Mathematics, State University of New York at Buffalo, Buffalo, New York, *Detection of Land Mines: a Scientific Perspective*, January 28, 1998

Invited Lectures

National and International Conferences

(all invitations are listed whether or not I was able to speak)

1. Invited Lecture, Global Summit in Condensed Matter Physics, CONMAT 21, Valencia, Spain, October 18-20, 2021. (declined due to COVID related concerns).
2. Plenary Lecture, Conference on Nonlinear Systems and Dynamics, Indian Institute of Technology, Kanpur, December 12-15, 2019.
3. Speaker (presentation by Guo Deng, joint with Gino Biondini), Waves 2019, Athens, Georgia, April 17, 2019.
4. Plenary Speaker, 2019 International Workshop on Multiscale Innovative Materials and Structures, Cetara, Salerno, Italy, February 28 - March 1, 2019 (declined, recovering from surgery)
5. Invited Speaker, Mini-Symposium on Granular Material Flows, 2018 US National Congress on Theoretical and Applied Mechanics, Chicago, June 4-9, 2018 (declined due to cost)
6. Invited Speaker, Eastern Section Meeting of the American Mathematical Society, Buffalo, New York, Sept 16-17, 2017.
7. Invited Speaker, Mini-Symposium on Mechanical Metamaterials, SIAM Meeting, Snowbird, Utah, May 21, 2017 (unable to travel due to fever).
8. Invited Speaker, Euromech Colloquium, Grenoble, France, July 11-13, 2016 (declined due to cost).
9. Invited Speaker, Engineering Mechanics Inst Conference, Vanderbilt University, Nashville, June 2016 (declined due to cost).
10. Invited Speaker, SIAM Mini symposium on Nonlinear waves in lattices, Philadelphia, May 2016 (lecture given by Dr Sourish Chakravarty, MIT, collaborator)
11. Invited Speaker, Understanding Granular Flows: Applications, Challenges and New Developments, at the World Congress on Computational Mechanics, Seoul, South Korea, 24-29 July, 2016 (declined)
12. Invited Speaker, Satake Symposium, Stanford University, June 19, 2015
13. Invited Speaker, Internoise 2014, Melbourne, Australia, Symposium EY Research projects on aircraft noise, November 16-19, 2014 (declined due to cost).
14. Invited Speaker, Minisymposium on The Propagation of Waves in Dissipative, Discrete Structures, 13th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials, October 19-22, 2014, Taua Resort, Sao Paulo, Brazil (canceled due to NSF funding constraints in the last weeks)
15. Invited Speaker, 1st International Symposium on Energy Challenges and Mechanics, Aberdeen, Scotland, UK, July 8-10, 2014 (declined due to scheduling conflict)
16. Invited Speaker in Mini-Symposium on Wave Propagation in Mechanical Systems, in Eighth European Nonlinear Dynamics Conference (ENOC 2014), Technische Universiteit Wien, Vienna, Austria, July 6-11, 2014 (declined due to scheduling conflict).

17. Invited Speaker, 10th AIMS international conference on Dynamical Systems, Differential Equations and Applications, July 07-11, 2014 in Madrid, Spain

18. Invited Speaker in Minisymposium, SIAM Dynamical Systems Meeting Minisymposium on Granular Chains as Dynamical Systems, Snowbird, Utah, May 2013.

19. Invited Speaker, International Conference on Perspectives of Computer Confluence with Sciences (ICPCCS12), Pune, India (Dec 10-12, 2012) (declined due to teaching commitments)

20. Invited Lecturer, CNRS Workshop on Terrorism, Paris, September 21-23, 2012

21. MRS Fall Meeting, Boston, Mass, November 2011 (declined due to prior commitments)

22. Invited Speaker, ASME Conference (MECHMAT, Session on Granular Materials), Chicago, Illinois, June 2011 (declined due to other travel).

23. Invited Speaker, 2nd Pan American/Iberian Meeting on Acoustics, Cancun, Mexico, November 15-17, 2010 (declined due to safety reasons in Mexico).

24. Invited Speaker, Particulate Materials in Extreme Environments (PMEE) 2010 Workshop, Lawrence Livermore National Labs, Livermore, CA, September 20-24, 2010 (declined due to lack of funding).

25. Invited Speaker, SIAM Workshop on Nonlinear Dynamics, Philadelphia, PA, August 2010.

26. Invited Panelist, DARPA Workshop on Harvesting Energy, Blacksburg, VA, March 3-4, 2010.

27. Invited Speaker, Southern Workshop on Granular Materials, Vina del Mar, Chile, Nov 29-Dec 4, 2009.

28. Invited Speaker and Workshop Panelist, Triservice (Army, Air Force and Navy) Workshop on Mechanical Energy Harvesting, Virginia Polytechnic Institute and State University, Blacksburg, VA, August 12, 2009.

29. Invited Speaker, Conference on Localized Excitations in Nonlinear Systems, Seville, Spain, July, 2009 (conflict with lecture at Powders and Grains 2009, my collaborator Dr T.R. Krishna Mohan from Centre for Mathematical Modeling and Computer Simulations, Bangalore, India delivered the invited lecture on my behalf).

30. US Army Workshop on Systems of Systems, Physical Sciences Laboratory, New Mexico State University, Las Cruces, New Mexico, March 17 - 18, 2009

31. Invited Speaker, International Workshop on Social Network Analysis, National Institute for Science, Technology and Development, Government of India, New Delhi, January 28 - 30, 2009

32. Invited Speaker, Disorder in Complex Systems and in Biology, Benares Hindu University, Varanasi, India, January 9-11, 2009 (declined due to scheduling conflict)

33. Invited Speaker, International Conference on Ultrasonics (ICU), Santiago, Chile, January 11-17, 2009 (declined due to scheduling conflicts)

34. Festschrift for Professor M Howard Lee, Seoul National University, Seoul, Korea, Title: Dynamics and thermodynamics in many body systems where temperature can't be defined, October 2008 (declined due to budgetary constraints)

35. Society for Industrial and Applied Mathematics Workshop, Title: Nonlinear dynamics in granular metamaterials, Rome, Italy, July 21-24, 2008

36. Invited Lecturer, US Air Force Workshop on Particle Mechanics in Extreme Environments 2008, Title: Mechanical energy propagation in granular systems: basic physics and potential applications, University of Florida REEF Facility, and Eglin Air Force Base, Florida, January 29-31, 2008

37. International Conference on Advances in Energy Research, Title: Ocean waves, mechanical impulses and electrical energy: concept of a simple conversion process (Keynote), December 12-14, 2007, Indian Institute of Technology, Bombay, Mumbai, India

38. American Society of Mechanical Engineers (ASME) Congress, Title: Tapered chain shock absorbers at large impact speeds, in Session on Blast Fragmentation organized by B. LaMattina, G. Subhash and Y. Rajapakse, November 11-15, 2007, Seattle, Washington

39. International Congress on Acoustics, Madrid, Spain, Title: Mechanical energy propagation in granular systems, Sept 2-9, 2007

40. IEEE-MWS-CAS Conference, Ottawa, Canada, Title: Acoustic interrogation of soil and the remote detection of shallow buried inclusions, August 2007 (delivered by L Gilcrist)

41. SUNY Conference on Instructional Technology, SUNY-Plattsburgh, Title: Best of MERLOT Physics, June 1, 2007

42. 17th US Army Symposium on Solid Mechanics, Baltimore, Maryland, Title: Tapered chain granular shock absorption systems, April 3, 2007

43. Southern Workshop on Granular Matter 2006, Vina del Mar, Chile, Title: Dust Dynamics and Filtration, Sep 13-16, 2006

44. 20th Annual American Institute of Aeronautics and Astronautics (AIAA) Microgravity Science and Space Processing for Exploration Symposium, January 9-12, 2006 Reno, Nevada, Titled: Dust flow through filters: a scaling law for filter clogging, (with T.R. Krishna Mohan, A. Sokolow, M. Nakagawa) (presentation done by M Nakagawa)

45. NASA-Kennedy Space Center Workshop on Granular Media, Cocoa Beach, FL, Titles: Mechanical energy propagation in granular media, & Dust filtration and filter jamming, Feb 2-3, 2005

46. NASA-Dust Mitigation Workshop, Colorado School of Mines, Golden, CO, Title: Dust Filtration, April 20-21, 2005

47. NASA Dust Workshop, Colorado School of Mines. Golden, CO, Title: Dust filtration, May 17-18, 2005

48. Speaker in Session on MERLOT Editorial Process, SUNY Conference on Instructional Technology, Binghamton, New York, May 23-26, 2005

49. Workshop on Pattern Formation and Transport Phenomena, Joao Pessoa, Brazil August 7-11 (declined due to other travel), 2005

50. International Conference on Physics Education 2005, New Delhi, India, Title: Kilambi Ramavataram Fellowship of the American Physical Society - the History and the Future, August 21-26, 2005

51. Speaker in Session on MERLOT Editorial Involvement, SUNY Conference on Instructional Technology, Stony Brook, NY, June 1-3, 2004

52. 9th International Conference on Similarity and Diversity, Daejeon, Korea, Title: Quasi-equilibrium in Nonlinear Chains, June, 17-18, 2004

53. Perspectives on Nonlinear Dynamics (Satellite Conference to StatPhys 23 in Bangalore), Chennai, India, Title: Solitary Waves in Granular Systems, Fermi-Pasta-Ulam Problem and More, July 12-15, 2004

54. Plenary Speaker, Latin American Workshop on Interdisciplinary Physics, Porto Allegre, Brazil , Title: When should you change your dust filter: Filter Clogging as a Problem with Fragile Scaling Exponents, (declined due to scheduling conflicts). August 8-12, 2004

55. Invited Talk at NASA Glenn Research Center Workshop on Dust Mitigation, Cleveland, Ohio, Title: Clogging of dust filters, December 19, 2004

56. Consortium of the Americas Mini-workshop on Granular Hydrodynamics and Related Topics, Albuquerque, New Mexico, Title: Energy propagation in Grains and Nonlinear Chains: Leaky Solitary Waves and Quasi-Equilibrium Phases, February 21, 2003

57. American Physical Society April 2003 Meeting, Philadelphia, PA in Symposium on Humanitarian Demining, Title: Mechanical energy propagation and backscattering in soil: imaging buried land mines, April 5, 2003

58. National Aeronautics and Space Administration Workshop on Fine Particulates in Fluids, Cleveland, Ohio, Title: Dust: making a mess and cleaning it up, May 5, 2003

59. SUNY Conference on Instructional Technology, Potsdam, New York, Title: Digital Libraries in Physics (Lecture delivered as a Narrated Power Point presentation because of my inability to physically attend the conference), May 30, 2003

60. Particles 2003, International Conference on Nanoparticles, Toronto, Canada, Title: Nanoprinting with Nanoprinters, August 23-26, 2003

61. International Silk Road Conference on Quantum Theory, Partial Differential Equations of Mathematical Physics and their Applications, Tashkent, Uzbekistan, Title: Quasi-equilibrium state, Sept 30-Oct 3, 2003 (Denied due to scheduling conflicts).

62. Keynote Speaker, Army Workshop on Soil Physics, Santa Fe, New Mexico, Title: Impulse propagation in Granular Beds, August 27-30, 2003

63. 8th Latin American Workshop on Nonlinear Physics 03 (LAWNP03), Salavor, Bahia, Brazil, Title: Quasi-equilibrium in Nonlinear Chains, September 28-October 3, 2003

64. Invited Talk at CIMAT - Southern Workshop on Granular Materials, Pucon, Chile, Title: Mechanical Energy Propagation in Granular Media, December 10-13, 2003

65. Slow Dynamics and the Glass Transition (organized by Arizona State University and Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, India with NSF Funds), Title: Memory in the Krumhansl-Schrieffer chain, January 6-9, 2002

66. 8th International Conference on Similarity in Diversity, Buffalo, New York; Title: Minisolitary Waves, May 15-17, 2002

67. Institute Lecturer at the Pan-American Science Institute (PASI) on the Frontiers of Non-equilibrium Processes, near Bariloche, Argentina, PASI programs are funded largely by NSF; Presented 3 Lectures, 2 lectures on Impulse Propagation in Granular Media, and 1 lecture on Continued Fraction Formalism for Relaxation Studies, June 2-13, 2002

68. Condensed Matter Physics in India and Abroad, (organized by S.N. Bose National Center and Bell Laboratories, USA), Calcutta, India, Title: Impulse propagation and backscattering in granular assemblies, January 2-4, 2001

69. International Conference on Sparsely Connected Systems: Porous and Granular Materials, organized by the Consortium of the Americas for Interdisciplinary Science, San Carlos de Bariloche, Argentina, Title: Nonlinear acoustics of granular assemblies, March 14-17, 2000

70. 137th Annual Meeting of the Acoustical Society of America, Atlanta, Georgia, Title: Nonlinear acoustics in granular media, June 2, 2000

71. International Workshop on Granular Media: Statics, Excitation and Dynamics, University of New Mexico, Albuquerque, Title: Sound and shock propagation in granular beds, June 26, 1998

72. 2nd International Conference on the Detection of Abandoned Land Mines, MD'98, Edinburgh, Scotland, United Kingdom, Title: Detection of non-metallic land mines using shock impulses, October 12-14, 1998

73. Dynamical Processes in Granular Materials: Understanding and Control, at The James Franck Institute, The University of Chicago, Chicago, Illinois on Nonlinear dynamics in granular columns, May 11-13, 1995

74. STATPHYS II-Calcutta, International Workshop on Statistical Physics of Disordered Systems, organized by the S.N. Bose National Center for Basic Sciences, Calcutta, India, Title: $1/t$ relaxation law of a classical particle in anharmonic potentials, August 6 and 11, 1995

75. STATPHYS I-Calcutta, International Workshop on the Statistical Physics of Disordered Solids, Glasses and Polymers, organized by the S.N. Bose National Center for Basic Sciences, Calcutta, India Title: Conditions for non-ergodicity in Hermitian systems, December 28, 1991

Universities, Laboratories & Government Agencies

(Named lecture(s) given are listed in Honors & Awards section)

1. Talk to physics freshmen, "Curiosity, Life and Physics," SUNY Oswego, February 23, 2021.

2. Epidemiology Group Talk, titled, "The Coronavirus Pandemic - A local level complex systems approach based study for NYS," Institute for Healthcare Informatics, SUNY Buffalo, November 17, 2020.

3. E3/LS Seminar, Social + Physical Systems & von Neumann, USAID, Washington, DC, October 9, 2020.

4. Talk to physics freshmen, "Landmines and how to find them," SUNY, Owego, September 28, 2020.

5. Physics Seminar, Department of Physics, University of North Texas, Denton, TX, April 15, 2019.

6. Colloquium, Physics Department and National Center for Physical Acoustics, The University of Mississippi, Oxford, MS, October 2, 2018.

7. Physics Seminar, Department of Physics and Materials Science, Missouri State University, Springfield, MO, September 20, 2018.

8. Physics Colloquium, Physical Sciences, Indian Institute of Science Education and Research - Kolkata (Kalyani, Nadia, West Bengal), July 25, 2018.

9. Two lectures on Non-equilibrium Statistical Physics, Presidency University, Kolkata, July 20, 2018.

10. Short Lecture at Swanirvar Bengal (NGO), Sharing Ideas about Teaching Science to Rural Children, Andharmanik, North 24 Parganas, West Bengal, June 28, 2018.

11. Physics Seminar, Indian Institute of Technology, Kharagpur, August 4, 2017

12. Physics Seminar, Indian Institute of Engineering, Science and Technology, Shibpur, July 26, 2017

13. Physics Colloquium, Indian Institute of Science Education and Research, Pune, July 10, 2017

14. Physics Seminar, Indian Institute of Science, Bangalore, July 7, 2017

15. Physics Colloquium, The University of Georgia, March 30, 2017

16. Physics Colloquium, University of Houston, November 8, 2016

17. Physics Colloquium, University of New Mexico, September 1, 2016

18. Physics Seminar, University of New Mexico, August 31, 2016

19. Short course on Nonlinear Dynamics, Dept of Physics, Sri Sathya Sai Institute of Higher Learning, Puttaparthy, India, June 22-27, 2016

20. Physics Colloquium, Inter University Centre for Astronomy and Astrophysics, Pune, India, June 16, 2016

21. Mathematics Colloquium, New Jersey Institute of Technology, December 4, 2015

22. Physics Seminar, Indian Institute of Engineering, Science and Technology, October 27, 2015

23. Materials Seminar, Army Research Laboratory, Aberdeen Proving Ground, Maryland, April 27, 2015

24. Mechanical Engineering Seminar, New Jersey Institute of Technology, March 18, 2015

25. School of Physical Sciences Seminar, Jawaharlal Nehru University, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, New Delhi, January 22, 2014

26. Physics Seminar, Department of Physics, Bengal Engineering and Science University, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, Kolkata, India, January 7, 2014

27. Physics Seminar, Department of Physics, Brock University, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, St Catharines, Ontario, Canada, November 28, 2013

28. Physics Seminar, Department of Physics, Baker Laboratories, Presidency University, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, Kolkata, India, July 31, 2013

29. Seminar, Centre for Mathematical Modelling and Computer Simulations, Council of Scientific Investigation and Research, Government of India, How to make a system with its own nonlinear force law and why is it worthwhile, July 24, 2012

30. Seminar, Centre for Mathematical Modelling and Computer Simulations, Council of Scientific Investigation and Research, Government of India, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, June 29, 2011

31. Physics Seminar, Indian Institute of Science, Bangalore, India, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, June 30, 2011

32. Physics Department Colloquium, SUNY Buffalo, Title: Newton's cradle, Fermi, Pasta, Ulam chain & the nonlinear many body frontier, January 20, 2011.

33. Theoretical Physics Seminar, S.N. Bose National Centre, Title: Modeling insurgency driven battles using Cellular Automata, February 5, 2009.

34. Physics Department Seminar, Presidency College, University of Calcutta, India, Title: Nonlinear dynamics in granular materials, February 3, 2009

35. GALCIT Colloquium (Applied Physics and Aeronautical Engineering), California Institute of Technology, Pasadena, California, Title: Nonlinear dynamics in granular materials, October 31, 2008

36. Physics Colloquium, Department of Physics and Astronomy, The University of Iowa, Title: When colliding solitary waves break, April 7, 2008

37. Theoretical Physics Seminar Circuit Lecturer (this is the equivalent of a named lecture), Department of Physics (hosted by the Vice Chancellor's Office), Benaras Hindu University, Varanasi, India, Title: Consequences of nonlinearity in granular (meta)materials, December 18, 2007

38. Colloquium, Department of Physics and Astronomy, The University of Georgia, Athens, Georgia, Title: Consequences of nonlinearity in granular (meta)materials, October 11, 2007

39. Presentation to UB2020 Scholar's Meeting, Office of the Vice President for Research, SUNY-Buffalo, Battle Models on April 30, 2007.

40. Colloquium, Center for Advanced Studies, University of New Mexico, Albuquerque, NM, Title: Granular Systems - Shock Transmitters & Shock Absorbers, April 27, 2007.

41. Invited Presentation on Shock Absorbing Panel Design and Fabrication to DARPA advisory board members, US Army Research Lab, Aberdeen Proving Ground, Maryland, March 20, 2007

42. Special Colloquium, Gifted Math Program, SUNY-Buffalo School of Education, Title: Fighting a Battle: how do we know who is winning? March 14, 2007

43. Impact Mechanics Seminar, US Army Research Labs, Aberdeen Proving Grounds, Aberdeen, Maryland, Title: Impulse dissipation in granular alignments, March 15, 2006

44. Special Colloquium, Gifted Math Program, SUNY-Buffalo, School of Education, Title: Space exploration, Mars mission and Physics, March 22, 2006

45. Colloquium, Department of Physics, SUNY at Brockport, Title: Space exploration, Mars mission and Physics, March 24, 2006

46. Colloquium, Department of Physics, SUNY at Brockport, Title: Impulse absorption by scalable, small tapered granular chains, March 24, 2006

47. Impact Mechanics Seminar, US Army Research Labs, Aberdeen Proving Grounds, Aberdeen, Maryland, Title: Mechanical energy propagation in tapered granular chain shock absorbers, February 16, 2005

48. ME Seminar, Department of Mechanical Engineering, California Institute of Technology Title: Mechanical energy propagation in granular systems, May 3, 2005

49. Seminar, Department of Chemistry and Physics, State University of New York - College at Brockport, Title: Solitary Waves, February 5, 2004

50. Condensed Matter Physics Seminar, Department of Physics, The Pennsylvania State University, University Park, PA, Title: Solitary Waves, April 20, 2004

51. Seminar, Department of Theoretical Physics, Indian Association for the Cultivation of Science, Kolkata Title: Mechanical energy propagation in granular systems, July 20, 2004

52. Presentation, Technology Transfer and Licensing Office, SUNY-Buffalo, Title: Tapered chain shock absorbers March 28, 2003

53. Colloquium, School of Physics, Jawaharlal Nehru University, New Delhi, India Title: Sound in Sand, January 10, 2002

54. Colloquium, Department of Physics, University of Houston, Houston, Texas, Title: Sound in Sand, May 1, 2002

55. Seminar, Department of Geophysics, Colorado School of Mines, Golden, CO, Title: Impulse Propagation in Granular Media, November 22, 2002

56. Physics Seminar, Department of Chemistry and Physics, State University of New York - College at Brockport Title: Sound in Sand, February 15, 2001

57. Nonlinear Science Seminar, Department of Physics, Duke University, Durham, North Carolina Title: More on Sound in Sand, April 16, 2001

58. Microgravity Fluid Physics Division, Glenn Research Center, National Aeronautics and Space Administration, Title: Impulse Propagation in Granular Beds, July 6, 2001

59. Colloquium at the Department of Physics, University of Utah, Salt Lake City, Utah, Title: Tapping out Solitary Waves in Bead Chains and Sounding out Landmines, October 25, 2001

60. Condensed Matter Physics Seminar, Department of Physics, University of Utah, Salt Lake City, Utah, Title: Theoretical Evidence for Ubiquity in Glassy Relaxation, October 26, 2001

61. Colloquium, S.N. Bose National Center for Basic Sciences, Calcutta, India, Title: Sound in Sand, December 22, 2001

62. Colloquium, S.N. Bose National Center for Basic Sciences, Calcutta, India Title: Ubiquity of Slow Relaxation in Glassy Systems, December 29, 2001

63. Research Seminar at Alameda Applied Sciences Corporation, San Leandro, California Title: Nonlinear acoustics in granular media, April 29 and May 10, 2000

64. Presentation at the Office of the Director of Technical Program on Humanitarian Demining, U.S. Army Night Vision Laboratories, Fort Belvoir, Virginia Title: Nonlinear acoustic detection of buried objects in soil, June 5, 2000

65. Presentation at the Office of Science and Technology, Countermine Team, U.S. Army Night Vision Laboratories, Fort Belvoir, Virginia, Title: Nonlinear acoustic detection and imaging of buried objects in soil: applications to humanitarian demining, August 11, 2000

66. Physics Colloquium, Maharaja Sayajirao University of Baroda, Vadodara, India Title: Propagation and backscattering of impulses in granular media, December 8, 2000

67. Research Seminar at the Eastman Kodak Company, Rochester, New York Title: Ejection of ferrofluid grains from a ferrofluid using nonlinear acoustic impulses, May 12, 1999

68. Seminar, Explosives Technology Group, Sandia National Laboratories, Albuquerque, New Mexico, Title: Sound and shock propagation in granular beds, June 24, 1998

69. Institute of Mechanics of Materials Seminar, Department of Applied Mechanics and Engineering Science, University of California at San Diego, California Title: Soliton-like objects in granular beds and humanitarian demining: The role of nonlinear science and fancy tuning forks in dealing with a crisis in the developing world, December 16, 1998

70. Seminar in Department 1841, New Materials: Theory and Validation, Sandia National Laboratories, Albuquerque, New Mexico, Title : Soliton-like objects in granular beds and humanitarian demining: The role of nonlinear science and fancy tuning forks in dealing with a crisis in the developing world, December 18, 1998

71. Statistical Physics Seminar, Department of Physics, Syracuse University, Syracuse, New York Title: Avalanches in dissipative grain piles: a story of dynamics near criticality, April 11, 1997

72. Seminar, Advanced Materials Laboratory, Sandia National Laboratories, Albuquerque, New Mexico, Title: Nonlinear dynamics in packed granular columns, April 17, 1997

73. Seminar, Environmental Laboratory, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi, Title: Soliton-like objects in Hertzian beds, August 13, 1997

74. Seminar, Asia Pacific Center for Theoretical Physics, Korea Advanced Institute of Science and Technology, Seoul, Korea Title: Soliton-like objects in granular beds: can they help detect metal-poor land mines?, August 21, 1997

75. Seminar, Asia Pacific Center for Theoretical Physics, Korea Advanced Institute of Science and Technology, Seoul, Korea, Title: A model Hamiltonian which yields stretched-exponential decay, August 25, 1997

76. Colloquium, Department of Physics, State University of New York at Albany, Albany, New York Title: From metastability to instability in granular media, February 9, 1996

77. Seminar, Federal Energy Technology Center, U.S. Department of Energy, Morgantown, West Virginia Title: Nonlinear dynamics in packed granular columns, April 19, 1996

78. Colloquium, Department of Physics, West Virginia University, Morgantown, West Virginia Title: From metastability to instability in granular media: the story of dynamics near criticality, April 19, 1996

79. Condensed Matter Physics Seminar, Department of Physics and Astronomy, Michigan State University, East Lansing, Michigan Title: Granular media: between the liquid and solid states, May 15, 1995

80. Condensed Matter Physics Seminar, Department of Physics, Carnegie-Mellon University, Pittsburgh, Pennsylvania Title: Dynamics of dry granular media, October 5, 1995

81. Colloquium, Department of Physics, State University of New York at Buffalo, Buffalo, New York Title: Atomistic simulations of 2D systems on substrates, February 11, 1994

82. Materials Science Seminar, Department of Theoretical Physics and The Clarendon Laboratory, The University of Oxford, Oxford, United Kingdom Title: Atomistic simulations of 2D systems on substrates, May 17, 1994

83. Colloquium, Department of Physics, The Bose Institute, The University of Calcutta, Calcutta, India Title: Atomistic simulations of 2D systems on substrates, June 21, 1994

84. Condensed Matter Physics Seminar, Department of Physics, Kansas State University, Manhattan, Kansas Title: Avalanches in Granular Media, February 8, 1993

85. Condensed Matter Physics Seminar, Department of Physics and Brockhouse Institute for Materials Research, McMaster University, Hamilton, Ontario, Canada, Title: Long time dynamics in many body systems using continued fractions, May 11, 1993

86. A.L. Laskar Memorial Colloquium, Department of Physics and Astronomy, Clemson University, Clemson, South Carolina, Title: Some recent developments in non-equilibrium many body physics, September 5, 1991

87. Condensed Matter Physics Seminar, Department of Physics, Indian Institute of Science, Bangalore, India Title: On the low temperature structure of graphite intercalation compounds, December 11, 1991

88. Colloquium, Department of Physics, Indian Institute of Science, Bangalore, India Title: Quantum spin dynamics of the Transverse Ising and XY models, December 13, 1991

89. Theory Seminar, Department of Applied Mathematics, Center for Advanced Study in Applied Mathematics, University College of Science and Technology, The University of Calcutta, Calcutta, India Title: Time evolution in quantum spin systems. December 31, 1991

90. Condensed Matter Physics Seminar, Department of Physics and Astronomy, Michigan State University, East Lansing, Michigan Title: The transverse dynamics of the Ising model, January 11, 1990

Research Students

High School

1. Emily Bowser, 2009, Senior, Clarence High School, Clarence, NY, Project: Nonlinear Dynamics of Symmetrically Perturbed Granular Alignments with an Odd Number of Grains
2. Melissa Judson, 2008, Senior, Clarence High School, Clarence, NY, Project: Nonlinear Impulse Penetration into Layered Systems, pursued BS in Physics at SUNY Buffalo
3. Brooke Mentkowski, 2002, Senior, North Tonawanda High School, Project: Solitary Waves, Completed BS in physics from SUNY Buffalo and did research with Prof B.D. McCombe
4. Arvin Chang, 1998, Senior, UB NYSSISM Student from Yorktown Heights, NY, Project: Relaxation of Nonlinear Oscillators, BS in Computer Science from Harvard University in 2002, works for a Silicon Valley startup.

Undergraduate Students with Year of Graduation

1. Aman Timalsina, MS, 2023, Project: Modeling COVID19 dispersion in United States
2. Joseph Ferrantini, BS, 2023, Project: Nonlinear dynamics in impure chains, simulations and experiments
3. Oscar Miranda, BS, 2022, Project: Solitary wave trains in the Toda lattice
4. Cody Kowal, BS, 2020, Project: Stopping a Shock Pulse
5. Matthew Murphy, BS, 2019, Summer student from SUNY - Stony Brook, Project: Granular flow experiments through a small orifice, jamming and Beverloo's law, Summer 2017, Summer 2018
6. Tyler Barrett, BS, 2018, Project: Statistical mechanics of FPUT chains, Since 2016-2018, Recipient of NSF Graduate Fellowship on joint work, 2018, NSF Graduate Fellowship Winner & Graduate Fellow in Physics at Cornell University, from Fall 2018
7. Jingpeng Xu, BS, 2018, Project: Driven granular chains, 2015
8. Jonathon C. Hayes, BS 2018, Project: Solitary wave scattering at the walls, 2015-2016
9. Michael Benson, BS Physics, 2017, Project: Collisional behavior of nanoparticles (honors thesis), 2012-2016, Studying intellectual property law at U Notre Dame Law School
10. William D. Pineros, BS Physics, 2012, Project: A geometrical approach to analyzing solitary wave dynamics in granular systems, Graduate Fellow in Chemistry at University of Texas at Austin
11. Zach van Zant, Pursued BS in Physics, 2010-11, Project: Nonlinear acoustics in granular beds (collaborated with Prof X. Jia at Univ of Paris, me and Prof D. Visco at Tennessee Technological Univ).

12. Nadine Ayoub, Pursued BA in Physics, Summer 2010-2012, Project: Solitary wave collisions in granular chains, Studying to be a Physics teacher

13. Alexander Breindel, BS, Physics, University of Rochester, now pursuing PhD at University of California at San Diego, Summer 2010, Project: Secondary Solitary wave production

14. Aharon Festinger, NSF-URGE Fellow (2009, continued as a student after URGE ended), BS, Physics & BS, Math, 2009, Project: Nonlinear acoustics of granular beds (honors thesis) 2007-2009, finished his UG Honors thesis in December 2009. Aharon moved to the PhD program in physics at Brown University since Fall 2010. Joined Army Special Covert Operations Unit

15. Nicholas DeMeglio, NSF-URGE Fellow (2009), BS, Mathematical Physics, Project: Solitary waves in Nonlinear Lattices, Battle Modeling and Species Stability, 2008-2010, Nick DeMeglio is working in the finance industry

16. Rebecca Hager, NSF-URGE Fellow (2009), Pursued BS, Mathematics, Project: Battle Modeling, 2009-2010, Becky Hager did a PhD in biostatistics at North Carolina State University. She is currently, Mathematical Statistician, Food & Drug Administration, Washington, DC

17. Matthew Westley, NSF-URGE Fellow (2009), Pursued BS, Mathematical Physics, Project: Battle Modeling and Species Stability, 2009-2011, Moved to a Presidential Fellow and a PhD student with me at SUNY Buffalo

18. Jorge Mok, NSF-URGE Fellow (2009), Pursued BS, Mathematics, Project: Battle Modeling, 2009-2010, PhD student at Rice University

19. Yoichi Takato, BS, MS (Mech Engg, Yamaguchi Univ), Pursued BS, Mathematical Physics, (Did collaborative studies with J Lechman and G.S. Grest at Sandia National Labs, New Mex). Project: Quasi-equilibrium state in Hertz systems and nanoscale grain-grain collisions, 2009-2010, Did PhD at SUNY Buffalo, postdoc at Okinawa Inst of Science and Tech, Japan, Asahi Glass, Tokyo, Japan

20. Avner Averman, McNair Scholar with me, BS, Physics, Project: Battle Studies, 2007-2008

21. Justin Reynard, Completed PhD in Chemistry, UG Projects: Study of the physics of bowling, 2007-2008

22. Nirmit Kumar, Pursued BS, Biophysics, Projects: Dust accumulation measurements, 2008 summer

23. Adam Sokolow, BS, Physics & Mathematics, SUNY-Buffalo, 2005, Did PhD as a Graduate Fellow, Physics Department, Duke University, 2011, Projects: Dust growth in environments, Shock absorption in loaded tapered chains, (received outstanding research award of the College of Arts & Sciences, SUNY-Buffalo for his work on secondary solitary waves, April 2005), 2002-2006 Now a Scientist at Army Research Lab, Aberdeen, MD

24. Anita Moursalian, BS, Biology, Project: Measurement of Dust Accumulation, 2006, Moved to the DDS program at SUNY UB Dental School, Now practicing a dentist in Long Island, NY

25. Jacob H. Miner, MS, University of Washington, Seattle, Software Engineer at Bungie, Seattle, WA, UG Projects: Size distribution measurements of particulates in a fluid through the filtration process, Quasi-equilibrium studies in granular systems, 2003-2003

26. Emily G. Bittle, Completed PhD in Physics at the University of Kentucky, Scientist at NIST (Dept of Commerce), Project: Controlling the Production of Solitary Waves in Hertz Chains, left SUNY-Buffalo in 2004 to continue her BS at SUNY-Geneseo but continued to collaborate, 2001-2006

27. Laura E Gilcrist, Completed Ph.D in Geology and BS in Geology with Physics minor, completed JD at SUNY Buffalo School of Law, Project: Energy Propagation and Backscattering in Layered Systems, 2002-2009

28. Dorian DiCocco, Completed BS, Mechanical Engineering, Wastewater Engineer at Momentive, Troy, NY, Project: Fabrication of Tapered Chain Shock Absorbers, 2004-2005

29. Kristie Beamer, Completed BS, Civil and Environmental Engineering, Engineer, NY State Thruway Authority, Albany, NY, Project: Fabrication of Tapered Chain Shock Absorbers, 2004-2005

30. David J. Schummer, Worked on topological defects in $2D$ systems, Graduated with a B.A. in Philosophy from SUNY-Buffalo in 1999. Current position is unknown. 1996

31. Tony Ng, Worked on Relaxation of Nonlinear Oscillators, Completed his B.S. in Physics from Stanford University in 2000. Current position is unknown, 1995

32. Cynthia J. Rudin, Worked on Avalanches in Granular Media, PhD in Computational Fluid Dynamics, Princeton University, Associate Professor, Sloan School, Statistics, Massachusetts Institute of Technology, 1995-1996

33. James C. Phillips at Michigan State University, Worked on Non-Convergent Infinite Continued Fractions, (Scientist at Beckman Inst, University of Illinois, Urbana) Mr. Phillips was a finalist (among the 5 top nominees) in the Apker Award Competition of the American Physical Society on the basis of work done under my supervision. He presented an invited talk at the APS Washington Meeting in April 1993 on the research he did under my supervision. Apker Award is given to the outstanding undergraduate in Physics in the United States. One of the key architects of the NAMD code for protein simulations, 1992

Graduate Students with Year of Graduation

1. Guo Deng, PhD 6/2019 (joint with Gino Biondini in Mathematics Dept, SUNY Buffalo), Research: Differences between integrable and non-integrable systems, Postdoc at Macquarie University, Sydney, Australia

2. Kevin VanSlyke, PhD student, Research: Multicomponent Fluid Flow Through Orifices: Molecular Dynamics Study

3. Rahul Kashyap, PhD student, 7/2019 Research: PULSEDYN Code and Time Evolution in Strongly Nonlinear Systems in $1D$, Programmer at Clear-Edge 3D, Broomfield, Colorado

4. Jeffrey Carvalho, PhD student, (new student)

5. Alexandra Westley, PhD, 2/2018, Research: Study of Selected Nonlinear Systems, Defended in December 2017, First Position: Lecturer, Department of Physics, SUNY College at Buffalo

6. Michelle Przedborski, PhD, 8/2017, Brock University (jointly advised by Surajit Sen and Prof. Thad Harroun), Vanier Fellow of Canada. Research: Nonlinear Waves in Granular Chains, First Position: Postdoctoral Fellow, Department of Applied Mathematics, University of Waterloo, Canada, from 1/18

7. Nathaniel Fuller, PhD student, Research: Global dynamics and dynamical transitions in strongly nonlinear systems, DoD SMART Fellow (Naval Surface Weapons Center, Panama City, Florida)

8. Yoichi Takato, Ph.D, 3/2015 (collaborative with Dr. Jeremy Lechman at Sandia National Labs), Research: Nanoparticle collisions at large impact speeds, Solitary waves and Quasi-equilibrium in Nonlinear Systems, First Position: Research Associate, Okinawa Institute of Science and Technology; Now Scientist, Asahi Glass Research Laboratories, Yokohama, Japan (1/2018)

9. William John Falls, Ph.D, 7/2014, Research Topic: Energy Transport through Nonlinear Trees, Currently: Assistant Professor of Physics, Erie Community College, SUNY

10. Souresh Chakravarty, PhD, Mechanical Engineering (advised by Profs S. Das and G. F. Dargush, Mechanical and Aerospace Engg, did research projects with me), 12/2015, Research Topic: Energy Harvesting in Metamaterials, Currently: Postdoctoral Fellow, Neuroscience, Picower Institute, Massachusetts Institute of Technology

11. Nicholas DeMeglio, PhD student, Research: Stability of breathers (left in 2013 for finance industry position)

12. Taehyong Kim, Ph.D, 7/2011, Computer Science (jointly advised by A. Zhang, Computer Science and Engineering, M. Ramanathan, Pharmaceutical Sciences, did projects with me), Research Topic: Computational Problems with Networks in Biology, First Position: Research Fellow, Carnegie Institution, Stanford University, CA, Current Position: Senior Bioinformatician, Bioinformatics Institute at the University of Pennsylvania

13. Linda Shanahan, Ph.D, 1/2011, Research Topic: Study of Battle Type Problems with Applications in Conflicts and Biology and Environment, Currently: Lecturer in Physics, SUNY College in Buffalo

14. Robert Paul Simion, Ph.D, 4/2010, Research Topic: Strongly nonlinear granular dynamics of several grain systems, First Position ; Postdoctoral Fellow in Radiology, Wayne State University Medical Center, Research Affiliate, Roswell Park Cancer Research Inst; Works now as a software consultant

15. Diankang Sun, Ph.D, 2010, defended PhD thesis in 10/2009, Research Topic: Generalized Hertz Law of Granular Contacts and Solitary Waves, First Position: Research Fellow, New Mexico Resonance, Albuquerque, NM, & then Entrepreneur in Albuquerque, NM.

16. Laura E. Gilcrist, Ph.D, Geology (Joint with Prof. Gregory S. Baker, formerly of Geology, now at Geology at Univ of Tennessee), defended PhD thesis in 4/2009, JD (Buffalo, 2010), Research Topic: Acoustics of Soil Beds at Ultra-shallow Depths, Currently: Patent lawyer, California

17. Robert Doney, Ph.D, Completed 1/2007, Research Topic: Shock Absorption by Tapered Chain Systems Currently: Physical Scientist, Army Research Lab, Aberdeen Proving Grounds, Maryland (served a term as Associate Director for Science and Technology at Aberdeen Proving Grounds for Science and Technology)

18. Jan M.M. Pfannes, M.S., Completed in 5/2003, M.S. Thesis Title: Energy propagation in granular chains, Currently: Completed PhD in Astronomy at University of Würzburg, Germany Currently: High School Math, Science and Rowing Teacher at R´ontgen Gymnasium, Germany

19. Felicia S. Manciu, Ph.D candidate (1999-2001), completed PhD with Prof. B.D. McCombe, Currently: Professor of Physics, University of Texas at El Paso

20. Marian Mihai Manciu, Ph.D, Completed in 8/2000, Ph.D Thesis Title: Nonlinear Acoustics in Granular Beds, Currently: Associate Professor of Physics, University of Texas at El Paso

21. Victoria N. Tehan, M.S., Completed in 5/1999, M.S. Thesis Title: Dynamics in a Gravitationally Loaded Chain of Elastic Beads, Currently: Quality Control Engineer, Delphi Automotive Systems, Lockport, NY

22. Thomas D. Blersch, M.A., Completed in 8/1997, M.A. Thesis Title: Relaxation in Impure $s = 1/2$ Spin Chains, Currently: Systems Programmer, American Federation of Teachers, Washington, DC

Postdoctoral Fellows

1. Luis Paulo Machado, Visiting Assistant Professor at SUNY Buffalo, Assistant Professor of Physics, Federal University of Pará, Brazil, 2017-2018

2. Huang Decai, Research Associate Professor at SUNY Buffalo, Associate Professor at Nanjing University of Science and Technology, China, 2012-2013.

3. Edgar Avalos, Fulbright Fellow from Mexico at SUNY-Buffalo from Universidad Autonoma de Mexico; Postdoctoral Research Fellow at National Central University, Taiwan, 2006-2009

4. T.R. Krishna Mohan, Senior Scientist at Centre for Mathematical Modelling and Computer Simulations Institute Mathematical Modelling Sciences, Bangalore, India 2002-2004 and 2005-2006, 2006-2007 (shared with Prof. M. Ramanathan in Pharmaceutical Sciences)

5. Farhat I. Surve, Lecturer at SUNY - Buffalo, APS Kilambi Ramavataram Fellow and Reader at Nowrosjee Wadia College, University of Pune, India (part time Postdoctoral Fellow, NSF supported), 2002 (Fall)

Current Research Collaborators and Projects

1. Edgar Avalos, Research Scientist, Tohoku University, Sendai, Japan, Project: Search for partially ergodic systems

2. Yoichi Takato, Research Scientist, Asahi Glass, Yokohama, Japan, Project: Nanoparticle collisions, Stability of nanobubbles in the bulk

3. John Sullivan and Jim Janciewicz, Erie County DWI Office and Commissioner of Erie County Central Police, respectively, New York, Project: Criminal behavior in Erie County (Student: Tyler J Barrett)

4. Richard Salvi, SUNY Distinguished Professor, Communication and Speech, SUNY Buffalo, Project: Developing models of tinnitus and hearing loss in the brain (Student: Nathaniel Fuller)

5. Priya Banerjee, Assistant Professor of Physics, SUNY Buffalo, Dynamics of charged polymer systems (Student: Kevin Van Slyke)

6. Denis Blackmore, Professor, Mathematics and Anthony Rosato, Professor, Mechanical Engineering, NJIT, Project: Dynamics of repelling magnetic systems (Collaborator: Edgar Avalos)

7. Gino Biondini, Professor, Mathematics, SUNY Buffalo, Project: Quasi-equilibrium and equipartitioning in the impure Toda chain (Student: Guo Deng)
8. Xiufeng Liu, Professor, Learning and Instruction, SUNY Buffalo, Project: Measuring student engagement in gateway courses
9. Eduardo Mercado III, Professor, Psychology, SUNY Buffalo, Project: Using sensors to search for relations between student's physical state and academic performance in gateway courses
10. Catherine Cook-Cottone, Associate Professor, Hanna Suh, Assistant Professor and Wendy Guyker, Visiting Assistant Professor, Educational Psychology, SUNY Buffalo, Project: Mindful Grit in gateway courses
11. Mukesh Tiwari, Ambani Institute, India and T.R. Krishna Mohan, National Institute of Advanced Study, India, Project: Impact dispersion in $3D$ disordered granular beds
12. Minhaz Hossain, Indian Institute of Engineering, Science and Technology, Project: Experiments in nonlinear dynamics and in nanoparticle alignments on silica surfaces.

Teaching

SUNY Buffalo

1. Spring 2020, PHY 101, College Physics (Enrollment: 142)
2. Fall 2019, PHY 519, Statistical Mechanics (Enrollment: 15)
3. Spring 2019, PHY 101: College Physics (Enrollment: 135)
4. Fall 2018, PHY 519, Statisrical Mechanics (Enrollment: 11)
5. Spring 2018, PHY 598: Indendent Study: A C Williams (Studying Quantum Mechanics, Sem 1), Nathaniel Fuller (Hearing and Brain)
6. Spring 2018, PHY 101: College Physics (ARC) (Enrollment: 136)
7. Fall 2017, PHY 519, Statistical Mechanics I (Emrollment: 9)
8. Spring 2017, PHY 101: College Physics (ARC) (Enrollment: 150)
9. Fall 2016, PHY 520: Statistical Mechanics II (Enrollment: 5)
10. Spring 2016, PHY101: College Physics (ARC) (Enrollment: 130)
11. Fall 2015, Sabbatical leave
12. Spring 2015, PHY101: College Physics (ARC) (Enrollment: 130); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 13)
13. Fall 2014, PHY519: Statistical Mechanics I (Enrollment: 6, 3 guest attendees); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 13)
14. Spring 2014, PHY101: College Physics (ARC) (Enrollment: 120); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 15)
15. Fall 2013, PHY 520: Statistical Mechanics II (Enrollment: 10); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 15)
16. Spring 2013, PHY101: College Physics (ARC) (Enrollment: 140); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 15)

17. Fall 2012, PHY 513: Electrodynamics I (Enrollment: 12); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 15)

18. Spring 2012, PHY101: College Physics (ARC) (Enrollment: 140); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 15)

19. Fall 2011, PHY 513: Electrodynamics I (Enrollment: 26); UE141: Freshman Discovery Seminar: Rural Life (Enrollment: 15)

20. Spring 2011, PHY101: College Physics I (ARC) (Enrollment: 140)

21. Fall 2010, PHY 509: Classical Dynamics (Enrollment: 18)

22. Spring 2010, PHY 101: College Physics I (ARC) (Enrollment: 120)

23. Fall 2009, PHY 520 Statistical Physics II (Enrollment: 7)

24. Spring 2009, PHY 101 College Physics I (ARC) (Enrollment: 120)

25. Fall 2008, Sabbatical Leave (UB, Univ of Paris, Caltech, UCSD)

26. Spring 2008, PHY 102: College Physics II (Enrollment: 175)

27. Fall 2007, PHY 513: Electrodynamics I (Enrollment: 15); UE141: Freshman Discovery Seminar - The nonlinear world (Enrollment: 15)

28. Spring 2007, PHY 101: College Physics I (ARC) (Enrollment: 120); UE141: Freshman Discovery Seminar: The nonlinear world (Enrollment 15)

29. Fall 2006, PHY 520 Statistical Physics II (Enrollment: 7)

30. Spring 2006, PHY 101: College Physics I (ARC) (Enrollment: 120)

31. Fall 2005, PHY 107: University Physics I (Enrollment: 180)

32. Spring 2005, PHY 582: Advanced Topics (Enrollment: 7); PHY 101: Introduction to Physics (ARC) (Enrollment: 120)

33. Fall 2004, PHY 107: University Physics I (Enrollment: 185)

34. Spring 2004, PHY 519/406: Statistical Physics I (Enrollment: 29)

35. Fall 2003, PHY 513: Electrodynamics I (Enrollment: 13)

36. Spring 2003, PHY 107: University Physics I (Enrollment: 185)

37. Fall 2002, PHY 520: Statistical Physics II (Enrollment: 7); PHY 101: College Physics (Enrollment: 185)

38. Spring 2002, PHY 107: University Physics I (Enrollment: 180); PHY 100: Introduction to Physics (Enrollment: 10)

39. Fall 2001, PHY 405: Thermal and Statistical Physics I (Enrollment: 10)

40. Spring 2001, Sabbatical Leave

41. Fall 2000, PHY 100 (1 Section): Introduction to Physics (Enrollment: 16); PHY 405: Thermal and Statistical Physics I (Enrollment: 12); PHY 581: Modern Physics for Science Teachers (Enrollment: 16)

42. Spring 2000, PHY 100 (2 Sections): Introduction to Physics (Enrollment: 35ea), PHY 406: Thermal and Statistical Physics II (Enrollment: 10)

43. Fall 1999, PHY 107: General Physics I (Enrollment: 155)
44. Spring 1999, PHY 107: General Physics I (Enrollment: 145)
45. Fall 1998, PHY 519: Statistical Physics I (Enrollment: 15)
46. Spring 1998, PHY 520: Statistical Physics II (Enrollment: 15)
47. Fall 1997, PHY 108: General Physics II (Enrollment: 120)
48. Spring 1997, PHY 107: General Physics I (Enrollment: 100); PHY 582: Advanced Non-Equilibrium Statistical Mechanics (Enrollment: 6)
49. Fall 1996, PHY 519: Statistical Physics I, Fall 1996 (Enrollment: 15)
50. Spring 1996, No teaching assignment (1 semester teaching relief is given to all assistant professors)
51. Fall 1995, PHY 519: Statistical Physics I (Enrollment: 10)
52. Summer III 1995, PHY 108: General Physics II (Enrollment: 50)
53. Spring 1995, PHY 520: Statistical Physics II (Enrollment: 8)
54. Fall 1994, PHY 519: Statistical Physics I (Enrollment: 6)
55. Summer III 1994, PHY 108: General Physics II (Enrollment: 50)
56. Spring 1994, PHY 108: General Physics II (Enrollment: 120)
57. Fall 1993, PHY 107 (MFC): General Physics I (Enrollment: 50)

Michigan State University

58. Fall 1992, PHY 832: Statistical Physics II (Enrollment: 15)