

Curriculum Vitae

Ning Xu

Personal Information

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Positions Held

2011 – present Professor, Hefei National Laboratory for Physical Sciences at the Microscale
2011 – present Professor, CAS Key Laboratory of Soft Matter Chemistry
2010 – present Professor, Department of Physics, University of Science and Technology of China
2009 – 2010 Research Assistant Professor, Department of Physics,
Chinese University of Hong Kong
2006 – 2009 Postdoctoral Fellow, James Franck Institute, University of Chicago
2006 – 2009 Postdoctoral Fellow, Department of Physics and Astronomy,
University of Pennsylvania
2000 – 2005 Research Assistant, Department of Mechanical Engineering,
Yale University

Education

2000 – 2005 Ph.D. in Engineering, Department of Mechanical Engineering, Yale University
Thesis title: Computer Simulations of Athermal and Glassy Systems
Thesis advisor: Professor Corey S. O'Hern
1995 – 2000 Ph.D. in Physics, Institute of Physics, Chinese Academy of Sciences
Thesis title: Computer Simulations of Single Bubble Sonoluminescence
Thesis advisor: Professor Long Wang and Professor Xiwei Hu
1991 – 1995 B.S. in Physics, Department of Modern Physics, University of Science and
Technology of China

Research Interests

Soft matter physics, including jamming transition and properties of jammed solids, glass transition, rheology of sheared granular materials, foams, and glasses, and nonequilibrium statistical mechanics.

Awards and Honors

2011 C N Yang Visiting Fellow at The Chinese University of Hong Kong
2010 CAS 100-Talent Programme
2004 Conference travel fund at Yale University
2000 Wean Fellowship for graduate study in Mechanical Engineering at Yale University
2000 President scholarship of Chinese Academy of Sciences
2000 Cai Si-dong Plasma Physics Foundation Award

Invited Talks at Conferences and Workshops

- Chinese Physical Society Autumn Meeting at Hangzhou, *Jamming at high densities*, September 2011.
- Chinese Physical Society Autumn Meeting at Hangzhou, *Direct determination of the size of basins of attraction of jammed solids*, September 2011.
- Workshop “Fluctuations and Response in Active Materials: From Driven Granular Systems to Swarming Bacteria” at Lorentz Center of Leiden University, *Jamming at high densities*, June 2011.
- Statistical Mechanics and Complex Systems Meeting at Beijing, *Direct determination of the size of basins of attraction of jammed systems*, December 2010.
- Chinese Physical Society Autumn Meeting at Tianjin, *Universality of the glass transition*, September 2010.
- Condensed Matter Theory and Statistical Physics Conference at Changchun, *Vibrational properties of jammed solids*, August 2010.
- Chinese Chemical Society Meeting at Xiamen, *Universality of the glass transition*, June 2010.
- American Physical Society March Meeting at Pittsburgh, Division of Condensed Matter Physics, *Scaling collapse of dynamics near $T=0$ jamming transition*, March 2009.
- Gordon Research Conference on Granular & Granular-Fluid Flow at Colby College, *Energy transport in jammed sphere packings*, June 2008.

Seminars and Colloquiums

- Institute of Physics, Chinese Academy of Sciences, *Jamming and glass transition*, September 2010.
- Hefei National Laboratory for Physical Sciences at the Microscale Summer School, *Jamming of soft matter*, July 2010.
- Department of Physics, Xiamen University, *Jamming and glass transition*, June 2010.
- Department of Chemistry, Nanjing University, *Jamming and glass transition*, January 2010.
- Department of Physics, University of Science and Technology of Hong Kong, *Jamming and glass transition*, November 2009.
- Department of Physics, The Chinese University of Hong Kong, *Jamming and glass transition*, October 2009.
- Department of Theoretical and Applied mechanics, Cornell University, *Velocity profiles and effective temperatures in sheared granular materials*, February 2005.
- School of Engineering and Applied Science, Yale University, *What is the temperature of flowing sand*, February 2005.

Publications

1. **Ning Xu***, Daan Frenkel, and Andrea J. Liu, “Direct determination of the size of basins of attraction of jammed solids”, *Physical Review Letters* **106**, 245502 (2011).

2. Cang Zhao, Kaiwen Tian, and **Ning Xu***, “New jamming scenario: From marginal jamming to deep jamming”, *Physical Review Letters* **106**, 125503 (2011).
3. **Ning Xu***, “Mechanical, vibrational, and dynamical properties of amorphous systems near jamming”, *Frontiers of Physics in China* **6**, 109 (2011).
4. Carl F. Schreck, **Ning Xu**, and Corey S. O’Hern, “A comparison of jamming behavior in systems composed of dimer- and ellipse-shaped particles”, *Soft Matter* **6**, 2960 (2010).
5. **Ning Xu*** and Emily S. C. Ching, “Effects of particle-size ratio on jamming of binary mixtures”, *Soft Matter* **6**, 2944 (2010).
6. **Ning Xu***, Vincenzo Vitelli, Andrea J. Liu, and Sidney R. Nagel, “Anharmonic and quasi-localized vibrations in jammed solids-modes for mechanical failure”, *Europhysics Letters* **90**, 56001 (2010).
7. Xiaoming Mao, **Ning Xu**, and Tom C. Lubensky, “Soft modes and elasticity of nearly isostatic lattices: randomness and dissipation”, *Physical Review Letters* **104**, 085504 (2010).
8. Vincenzo Vitelli, **Ning Xu**, Matthieu Wyart, Andrea J. Liu, and Sidney R. Nagel, “Heat transport in model jammed solids”, *Physical Review E* **81**, 021301 (2010).
9. **Ning Xu***, Thomas K. Haxton, Andrea J. Liu, and Sidney R. Nagel, “Equivalence of glass transition and colloidal glass transition in the hard-sphere limit”, *Physical Review Letters* **103**, 245701 (2009) (Editor’s Suggestions and highlighted in *Physics* online).
10. Zorana Zeravcic, **Ning Xu**, Andrea J. Liu, Sidney R. Nagel, and Wim van Saarloos, “Excitation of ellipsoid packings near jamming”, *Europhysics Letters* **87**, 26001 (2009).
11. Zexin Zhang*, **Ning Xu***, Daniel T. N. Chen, Peter Yunker, Ahmed M. Alsayed, Kevin B. Aptowicz, Piotr Habdas, Andrea J. Liu, Sidney R. Nagel, and Arjun G. Yodh, “Thermal vestige of the zero-temperature jamming transition”, *Nature* **459**, 230 (2009). (* Equally contributed; correspondence authors)
12. Micah Lundberg, Kapilanjani Krishan, **Ning Xu**, Corey S. O’Hern, and Michael Dennin, “Comparison of low amplitude oscillatory shear in experimental and computational studies of model foams”, *Physical Review E* **79**, 041405 (2009).
13. **Ning Xu***, Vincenzo Vitelli, Matthieu Wyart, Andrea J. Liu, and Sidney R. Nagel, “Energy transport in jammed sphere packings”, *Physical Review Letters* **102**, 038001 (2009).
14. Micah Lundberg, Kapilanjani Krishan, **Ning Xu**, Corey S. O’Hern, and Michael Dennin, “Reversible plastic events in amorphous materials”, *Physical Review E* **77**, 041505 (2008).
15. **Ning Xu***, Matthieu Wyart, Andrea J. Liu, and Sidney R. Nagel, “Excess vibrational modes and the boson peak in model glasses”, *Physical Review Letters* **98**, 175502 (2007).
16. **Ning Xu** and Corey S. O’Hern, “Measurements of the yield stress in frictionless granular systems”, *Physical Review E* **73**, 061303 (2006).
17. **Ning Xu** and Corey S. O’Hern, “Effective temperatures in repulsive glasses sheared at fixed normal load”, *Powders and Grains*, eds. R. Garcia-Rojo, H. J. Hermann, and S. McNamara, (A. A. Balkema, Leiden, 2005).
18. **Ning Xu**, Corey S. O’Hern, and Lou Kondic, “Stabilization of nonlinear velocity profiles in athermal systems undergoing planar shear flow”, *Physical Review E* **72**, 041504 (2005).

19. **Ning Xu**, Jerzy Blawdziewicz, and Corey S. O'Hern, "Random close packing revisited: Ways to pack frictionless disks", *Physical Review E* **71**, 061306 (2005).
20. **Ning Xu** and Corey S. O'Hern, "Effective temperature in athermal systems sheared at fixed normal load", *Physical Review Letters* **94**, 055701 (2005).
21. **Ning Xu**, Corey S. O'Hern, and Lou Kondic, "Velocity profiles in repulsive athermal systems under shear", *Physical Review Letters* **94**, 016001 (2005).
22. **Ning Xu***, Robert E. Apfel, Anthony Khong, Xiwei Hu, and Long Wang, "Water vapor diffusion effects on gas dynamics in a sonoluminescing bubble", *Physical Review E* **68**, 016309 (2003).
23. **Ning Xu***, Long Wang, and Xiwei Hu, "Bremsstrahlung of nitrogen and noble gases in single-bubble sonoluminescence", *Physical Review E* **61**, 2611 (2000).
24. **Ning Xu***, Long Wang, and Xiwei Hu, "Extreme electrostatic phenomena in a single sonoluminescing bubble", *Physical Review Letters* **83**, 2441 (1999).
25. **Ning Xu***, Long Wang, and Xiwei Hu, "Numerical study of electronic impact and radiation in sonoluminescence", *Physical Review E* **57**, 1615 (1998).

Research Funding

- Startup from University of Science and Technology of China, 2010.
- National Natural Science Foundation (general program), "Theoretical and computational study of jamming and the glass transition of amorphous systems", No. 11074228, 2010-2012.
- National Natural Science Foundation (training project of major research plan), "Self-assembly of core-softened colloids", No. 91027001, 2010-2012.
- CAS 100-talent Program, 2011-2013.
- Fundamental Research Funds for the Central Universities, "Theoretical study of dynamics of soft materials", No. 2340000034, 2011-2013.
- National Basic Research Program of China (973 Program), No. 2012CB821500, 2012-2016.

Professional Activities

- Referee for *Europhysics Letters*, *European Physical Journal E*, *Journal of Statistical Physics*, *soft matter*; grant review for Netherlands Organisation for Scientific Research (NWO).
- Member of American Physical Society since 2002.