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Junchao Xia

Curriculum Vitae

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Clark University
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Education

- 9/1999– • Ph.D., physics, with Professor Harvey Gould, Department of Physics, Clark University, Worcester, MA, “Computer simulations of statistical models of earthquakes,” expected Winter 2005.
- 9/1997–7/1999 • M.S., condensed matter physics, with Professor Zhengang Zhu, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, China, “Microstructure evolution of liquid metals during ultra-fast solidification.”
- 9/1996–7/1997 • Advanced graduate study, University of Science and Technology of China, Hefei, China.
- 9/1992–7/1996 • B.S., physics, Shandong University, Jinan, China.

Teaching Experience

- 9/1999–5/2001 • Teaching assistant of introductory physics and computer simulation laboratory, Department of Physics, Clark University. My responsibilities were grading homework, setting up labs for students, and leading the laboratory and the help session.

Research Experience

- 9/2001– • Research assistant with Harvey Gould and William Klein, Department of Physics, Boston University. Developed molecular dynamics and Monte Carlo simulation programs for the Burrige-Knopoff spring-block model of earthquakes and its cellular automata versions such as the Rundle-Jackson-Brown and Olami-Feder-Christensen models; Investigated the mean-field behavior of the Burrige-Knopoff and cellular automata models with long-range interactions; Maintained hardware and software for a cluster of computers with Mac OS X and Linux systems in the computer simulation laboratory.
- 9/1997–7/1999 • Research assistant with Zhengang Zhu and Changsong Liu, Institute of Solid State Physics, Chinese Academy of Sciences. Developed molecular dynamics programs (NVT and NPH) for liquid metals and semiconductors using realistic multi-body interaction potentials such as embedded atom method and Tersoff method. Developed microscopic structure analysis programs to identify clusters in liquids, crystals, and glasses.

Computer Experience

- Operating Systems • Linux/Unix, Mac OS X, Windows 2000/XP.
- Languages • Fortran 77/90/95, C/C++, Java, Python/VPython, and MPI/OpenMP.
- Administration • Linux, Mac OS X, NFS, NIS, LAN.
- Other • PLplot/PGPLOT/OpenGL, Origin, Gnuplot, Octave, L^AT_EX, HTML, and Office/OpenOffice.

Honors and Prizes

- 7/1999 • WEIHUA Science and Technology Scholarship awarded by the Chinese Academy of Sciences.
- 9/1996–7/1999 • Excellent Student, Institute of Solid State Physics, Chinese Academy of Sciences.

Professional Affiliations

- Member, American Physical Society, Division of Condensed Matter Physics, Division of Computational Physics, Division of Chemical Physics.
- Member, American Geophysical Society, Division of Nonlinear Geophysics, Division of Seismology, and Division of Tectonophysics.

Publications

1. Junchao Xia, Harvey Gould, W. Klein, and J. Rundle, “Simulation of the Burrige-Knopoff model of earthquakes with variable range stress transfer,” accepted by Phys. Rev. Lett., cond-mat/0507616.
2. Junchao Xia, Harvey Gould, W. Klein, and J. Rundle, “Long range effects on the Burrige-Knopoff earthquake model,” in preparation for Phys. Rev. E.

3. Junchao Xia, M. Anghel, Harvey Gould, W. Klein, J. B. Rundle, and J. S. Sá Martins, “Scaling in a cellular automaton model of earthquake faults,” in preparation for Phys. Rev. E.
4. Junchao Xia, Harvey Gould, W. Klein, “Simulations of the Burridge-Knopoff model”, Third International APEC Cooperation for Earthquake Simulation (ACES) Meeting, 5–10 May 2002, Maui.
5. C. S. Liu, Z. G. Zhu, Junchao Xia, and D. Y. Sun, “Cooling rate dependence of structural properties of aluminium during rapid solidification,” J. Phys.: Condens. Matter. **13**, 1873 (2001).
6. C. S. Liu, Junchao Xia, Z. G. Zhu, and D. Y. Sun, “The cooling rate dependence of crystallization for liquid copper: a molecular dynamics study,” J. Chem. Phys. **114**, 7506 (2001).
7. Z. G. Zhu, C. S. Liu, and Junchao Xia, “Study on the properties of interstitialcies in aluminium glass by MD simulation,” J. Alloys and Compounds, (ICIFUAS-12, July, 1999).
8. C. S. Liu, Z. G. Zhu, Junchao Xia, and D. Y. Sun, “A MD simulation study on the local inherent structures of liquid silicon at different temperatures,” Phys. Rev. B **60**, 3194 (1999).
9. Jun-Chao Xia, Zhen-Gang Zhu, and Chang-Song Liu, “Final structures of crystallizations of liquid copper studied by molecular dynamics simulation,” Chin. Phys. Lett. **16**, 850 (1999).

Conference Talks and Posters

1. Junchao Xia, Harvey Gould, W. Klein, and J. Rundle, “Mean-Field Behavior of the Burridge-Knopoff Model with Long-Range Interactions”, (talk), American Physical Society 2005 March Meeting, 22 March, 2005, Los Angeles.
2. Junchao Xia, Harvey Gould, W. Klein, and J. Rundle, “Effects of long range interactions in the Burridge-Knopoff earthquake model” (talk), Greater Boston Area Statistical Mechanics Meeting, 16 October 2004, Brandeis University.
3. Junchao Xia, Harvey Gould, W. Klein, and J. Rundle, “Simulation of the Burridge-Knopoff model with long-range interactions” (poster), American Geophysical Union 2003 Fall Meeting, 8–12 December 2003, San Francisco.
4. Junchao Xia, Harvey Gould, and W. Klein, “Simulation of earthquakes using the Burridge-Knopoff model” (talk), Greater Boston Area Statistical Mechanics Meeting, 18 October 2003, Brandeis University.
5. Junchao Xia, Harvey Gould, and W. Klein, “Simulations of earthquakes using the Burridge-Knopoff model” (poster), Non-Equilibrium Statistical Mechanics in the New Millennium: A Celebration of William Klein’s Contributions on His Sixtieth Birthday, 29–30 March 2003, Boston University.
6. Junchao Xia, Harvey Gould, and W. Klein, “Simulations of the Burridge-Knopoff model” (poster), Third International APEC Cooperation for Earthquake Simulation (ACES) Meeting, 5–10 May 2002, Maui.

Tutorials and Workshops

1. Slow Dynamics Tutorial, October 23, 2004, Brandeis University.
2. High Performance Computing Workshop (MPI and OpenMP), October 13–14, 2004, Boston University.
3. Using MPI (Globus Version) on the Alliance Grid Testbed, October 29, 2003, Access Grid Conference Facility at Boston University.
4. Parallel Programming with MPI, October 3, 10, 17, and 24, 2002, Access Grid Conference Facility at Boston University.

References

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