

Curriculum Vitae

Hyunbum Jang

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Personal Data

First name: HYUN BUM
Last name: JANG
Date of birth: August 21st, 1965
Gender: Male
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Place of birth: Seoul, Korea
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Education

March 1994 to November 1999

PhD in Physics
University of Auckland
Auckland, New Zealand

July 1993 to November 1993

Certificate in English for Academic Studies
Unitec Institute of Technology
Auckland, New Zealand

March 1991 to February 1993

PhD in Physics (suspended due to retirement of supervisor)
Kyung Hee University
Seoul, Korea

March 1988 to February 1990

MSc in Physics
Kyung Hee University
Seoul, Korea

March 1984 to February 1988

BSc in Physics
Kyung Hee University
Seoul, Korea

Published / Submitted Papers

Hyunbum Jang, Paul S. Crozier, Mark J. Stevens, and Thomas B. Woolf. 2004. How environment supports a state: Molecular dynamics simulations of two states in bacteriorhodopsin suggest lipid and water compensation. *Biophys. J.* 87:129-145.

Hyunbum Jang, Malcolm J. Grimson, and Thomas B. Woolf. 2004. Stochastic dynamics and the dynamic phase transition in thin ferromagnetic films. *Phys. Rev. E.* 70:047101-047104.

Thomas B. Woolf, Daniel M. Zuckerman, Nandou Lu, and **Hyunbum Jang**. 2004. Tools for channels: Moving towards molecular calculations of gating and permeation in ion channel biophysics. *J. of Molecular Graphics and Modeling.* 22:359–368.

Hyunbum Jang, Carol K. Hall, and Yaoqi Zhou. 2004. Thermodynamics and stability of β -sheet complex: molecular dynamics simulations on simplified off-lattice protein models. *Protein Sci.* 13:40-53.

Hyunbum Jang, Carol K. Hall, and Yaoqi Zhou. 2004. Assembly and kinetic folding pathways of a tetrameric β -sheet complex: molecular dynamics simulations on simplified off-lattice protein models. *Biophys. J.* 86:31-49.

Hyunbum Jang, Malcolm J. Grimson, and Carol K. Hall. 2003. Exchange anisotropy and the dynamic phase transitions in thin ferromagnetic Heisenberg films. *Phys. Rev. E.* 68:046115-046119.

Hyunbum Jang, Malcolm J. Grimson, and Carol K. Hall. 2003. Dynamic phase transitions in thin ferromagnetic films. *Phys. Rev. B.* 67:094411-094421.

Hyunbum Jang, Carol K. Hall, and Yaoqi Zhou. 2002. Protein folding pathways and kinetics: molecular dynamics simulations of β -strand motifs. *Biophys. J.* 83:819-835.

Hyunbum Jang, Carol K. Hall, and Yaoqi Zhou. 2002. Folding thermodynamics of four-strand antiparallel β -sheet proteins. *Biophys. J.* 82:646-659.

Hyunbum Jang and Malcolm J. Grimson. 2001. Hysteresis and the dynamic phase transition in thin ferromagnetic films. *Phys. Rev. E.* 63:066119-066129.

Hyunbum Jang and Malcolm J. Grimson. 2000. Surface-induced ordering in thin uniaxial liquid crystal films. *Phys. Rev. E*. 61:511-518.

Hyunbum Jang and Malcolm J. Grimson. 1999. The competition of bulk and surface fields in transverse Ising model thin film. *J. Phys.: Condens Matter*. 11:5045-5056.

Hyunbum Jang and Malcolm J. Grimson. 1998. Interface localization in thin ferromagnetic films. *J. Phys.: Condens Matter*. 10:9641-9654.

Hyunbum Jang and Malcolm J. Grimson. 1997. Thin ferromagnetic films with competing surfaces: a Monte Carlo study of the classical Heisenberg model. *Phys. Rev. B*. 55:12556-12560.

Manuscripts in Preparation

Hyunbum Jang and Thomas B. Woolf. 2004. Samplings conformational transitions of the fusion domain from influenza hemagglutinin (HA).

Hyunbum Jang and Thomas B. Woolf. 2004. Molecular dynamics simulations of two voltage dependent potassium channels (KvAP) within explicit lipid and water environment.

Hyunbum Jang and Thomas B. Woolf. 2004. Multiple dynamic pathways in the conformational transitions of alanine dipeptide: dynamic importance sampling analysis.

Hirsh Nanda, Hyunbum Jang, and Thomas B. Woolf. 2004. Three-dimentional water density map calculation around a protein and biomolecular systems.

Hyunbum Jang and Carol K. Hall. 2004. Molecular dynamics simulations on small β -amyloid fibrils.

Refereed Papers

E. Machado, G. M. Buendía, P. A. Rikvold, and R. M. Ziff. 2004. Response of a catalytic reaction to periodic variation of the CO pressure: Increased CO₂ production and dynamic phase transition. *Phys. Rev. E*. (EU9094).

R. Thul and M. Falcke. 2004. Stability of membrane bound reactions. *Phys. Rev. Lett.* (LR9739).

M. Acharyya. 2003. Multiple dynamic transitions in anisotropic Heisenberg ferromagnet driven by polarised magnetic field. *Phys. Rev. E.* (EKJ899).

Posters / Presentations

Hyunbum Jang and Thomas B. Woolf. 2004. Initial applications of the dynamic importance sampling method (DIMS) for conformational transitions of proteins. Poster in Biophysical Society 48th annual meeting, Baltimore, MD.

Hyunbum Jang, Paul S. Crozier, Mark J. Stevens, and Thomas B. Woolf. 2003. Molecular dynamics simulations of two structurally defined intermediates in the bacteriorhodopsin photocycle. Poster in Biophysical Society 47th annual meeting, San Antonio, TX.

Hyunbum Jang and Carol K. Hall. 2003. Thermodynamics and stability of a β -sheet complex: Molecular dynamics simulations. Poster in Biophysical Society 47th annual meeting, San Antonio, TX.

Hyunbum Jang and Carol K. Hall. 2002. Molecular dynamics simulations of a β -sheet complex. Poster in Biophysical Society 46th annual meeting, San Francisco, CA.

Anne Voegler Smith, Carol K. Hall, and Hyunbum Jang. 2001. Molecular dynamics simulations of multi-protein systems. Poster in Biophysical Society 45th annual meeting, Boston, MA.

Professional Experiences

September 2002 to present

Postdoctoral Fellow

Department of Physiology

Johns Hopkins University, School of Medicine

Research Project:

- 1) Exploring membrane protein structure and function.
- 2) Explicit membrane protein setting and simulations.
- 3) 3-D water and salt density map calculations and visualization.
- 4) Implementation of dynamic important sampling analysis for large biomolecular systems in functionally different conformational states.
- 5) Development of parallel computing simulations within NAMD for K^+ -channel (KvAP).

April 2000 to August 2002

Postdoctoral Research Associate
Department of Chemical Engineering
North Carolina State University

Research Project:

- 1) Development of FORTRAN code for simplified off-lattice models of β -sheet proteins.
- 2) Implementation of discontinuous molecular dynamics simulations for isolated and multiple β -sheet proteins.
- 3) Construction of models β -amyloid fibril within CHARMM program.

October 2000 to November 2000

Visiting to Assistant Professor Yaoqi Zhou
Department of Physiology and Biophysics
State University of New York at Buffalo

Purpose: Discipline and development of CHARMM program.

March 1994 to August 1999

Research Assistant for Associate Professor Malcolm J Grimson
Department of Physics, University of Auckland
Auckland, New Zealand

Duties:

- 1) Development of FORTRAN code for thin ferromagnetic films with continuous spins.
- 2) Development of Metropolis Monte Carlo algorithms for thin ferromagnetic Heisenberg films with various types of anisotropy in the model and thin liquid crystal film with a ferromagnetic exchange anisotropy.

March 1988 to February 1993

Research Assistant for Professor Taeman Kim
Department of Physics, Kyung Hee University Seoul, Korea

Duties:

- 1) Fabrications of vacuum equipment including chamber, sputtering equipment, and semiconductor devices.
- 2) Development of techniques for measuring thermally stimulated current and photo luminescence current in amorphous semiconductors.
- 3) Development of high temperature vacuum furnace facility.

Teaching Experiences

March 1996 to November 1998

Voluntary Physics Teacher

Top-Elite Academy

Auckland, New Zealand

Course: final year and penultimate year of high school physics.

March 1995 to February 1996

Laboratory Supervisor/Demonstrator

Department of Physics, University of Auckland

Auckland, New Zealand

Course: 1st year physics.

March 1991 to February 1993

Teaching Assistantship

Department of Physics, Kyung Hee University

Seoul, Korea

Course: 4th year solid state physics laboratory.

March 1992 to November 1992

Physics Tutor

Department of Physics, Sang Ji University

Wonju, Kangwon-Do, Korea

Course: 2nd - 3rd year advanced electronics, including laboratory works.

March 1988 to February 1990

Scholarship Assistant Teacher

Department of Physics, Kyung Hee University

Seoul, Korea

Course: 1st year mechanics laboratory & 3rd year optics laboratory.

Committees / Memberships

March 2000 to present

Member, Biophysical Society

March 1988 to February 1993

Member, Korean Physical Society

March 1992 to February 1993

Member, Physics Dept. Graduate Student Committee (PhD rep.)

March 1989 to February 1990

Member, Physics Dept. Graduate Student Committee (MSc rep.)

March 1984 to February 1988

Member, University Radio Broadcasting Station (Scholarship awarded)

Skills Profile

Operating skills: UNIX, LINUX, IBM PC's (Windows 98/2000/NT/XP), and VMS based workstations.

Programming: CHARMM program, FORTRAN, X-Windows, NAMD, VMD, Pymol, Sigma Plot, and Html.

Instrumentation / Electronics: Circuit design, analysis, and construction.

References

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Carol K. Hall

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