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EDUCATION

PhD: Physics, University of Illinois at Urbana-Champaign (UIUC), Aug, 2007

Advisor: Professor Klaus Schulten

MS: Finance, UIUC, May, 2007

MS: Physics, Tsinghua University (Beijing, China), January, 2001

Advisor: Professor Guozhen Wu 吴国祯

BS: Physics, Tsinghua University, 清华物理系 June, 1998

PROFESSIONAL EMPLOYMENT

Dec 2011 – present: Tenure-track Assistant Professor 特聘研究员, Complex System Research Division, Beijing Computational Science Research Center, Chinese Academy of Engineering Physics 北京计算科学研究中心 (中国工程物理研究院)

Sept 2007 – Nov 2011: Postdoctoral Fellow with Oster Group in Molecular and Cellular Biology, and Bustamante Lab in Physics, University of California (UC), Berkeley.

Jan 2003 – Aug 2007: Research assistant in Theoretical and Computational Biophysics Group, Beckman Institute, UIUC

Aug 2001- Dec 2002: Teaching assistant in undergraduate Quantum Physics and graduate Quantum Mechanics, Department of Physics, UIUC

Aug 1998 – Jan 2001: Research assistant in Molecular and Nano Sciences Laboratory, Department of Physics, Tsinghua University, 清华物理系, China.

Funding Awards

2013-2016 National Natural Science Foundation of China (NSFC) 国家自然科学基金面上项目 Grant #11275022

2012-2015 1000-Talent Global Recruitment Program for Young Scholar 中组部国家青年千人计划

2007-2010 UC Berkeley Chancellor's Postdoctoral Fellowship, and Clare Boothe Luce Fellowship

PUBLICATIONS

25. Lin-Tai Da[†], Chao E[†], Yao Shuai, Shaogui Wu, Xiaodong Su, and **Jin Yu***. T7 RNA Polymerase Translocation is Facilitated by Helix Opening on the Fingers Domain that may also Prevent Backtracking. *Nucleic Acids Research* gkx495, 2017 ^{†equal contribution}
24. Chuanbiao Zhang, **Jin Yu**, and Xin Zhou*. Imaging Metastable States and Transitions in Proteins by Trajectory Map. *The Journal of Physical Chemistry B*, 121(18) 4678-4686, 2017
23. Chao E, Baogen Duan, and **Jin Yu***. Nucleotide Selectivity at a Preinsertion Checkpoint of T7 RNA Polymerase Transcription Elongation. *The Journal of Physical Chemistry B*, 121(15) 3777-3786, 2017
22. **Jin Yu***. Computational investigations on polymerase actions in gene transcription and replication: Combining physical modeling and atomistic simulations. *Chinese Physics B*, 25 (1) 018706, 2016
21. Lin-Tai Da, Chao E, Baogen Duan, Chuanbiao Zhang, Xin Zhou, **Jin Yu***. [A jump-from-cavity pyrophosphate ion release assisted by a key lysine residue in T7 RNA polymerase transcription elongation.](#) *PLOS Computational Biology*, 11 (11), e1004624, 2015
20. Jianhua Xing*, **Jin Yu**, Hang Zhang, Xiaojun Tian. Computational modeling to elucidate molecular mechanisms of epigenetic memory. *Epigenetic Technological Applications In TRANSLATIONAL EPIGENETICS* by Elsevier chapter 12, 245-264, 2015
19. Bo Cheng, Shaogui Wu, Shixin Liu, Piere Rodriguez, **Jin Yu***, Shuxun Cui*. Protein denaturation at single-molecule level: the effect of nonpolar environments and its implications to the unfolding mechanism by proteases *Nanoscale*, 7, 2970, 2015
18. **Jin Yu***, Lin-Tai Da, Xuhui Huang*. Constructing kinetic models to elucidate structural dynamics of a complete RNA polymerase II elongation cycle. *Physical Biology*, 102, 016004, 2015
17. **Jin Yu***. Efficient fidelity control by stepwise nucleotide selection in polymerase elongation. *Molecular Based Mathematical Biology*, 2,141-160, 2014
16. Baogen Duan, Shaogui Wu, Lin-Tai Da, **Jin Yu***. A critical residue selectively recruits nucleotides for T7 RNA polymerase transcription fidelity control. *Biophysical Journal*, 107, 2130-2140, 2014

15. **Jin Yu***. Coordination and control inside simple biomolecular machines. *Advances in Experimental Medicine and Biology In Protein Conformation Dynamics* by Springer 805, 2014, 353-384, Springer, 2014
14. **Jin Yu***, George Oster*. A small post-translocation energy bias aids nucleotide translocation in T7 RNA polymerase transcription. *Biophysical Journal*, 102, 532-541, 2012.
13. **Jin Yu***, Wei Cheng, Carlos Bustamante, and George Oster*. Coupling translocation with nucleic acid unwinding by NS3 helicase. *Journal of Molecular Biology*, 404:439-455, 2010.
12. Jeehae Park, Sua Myong, Anita Niedziela-Majka, Kyung Suk Lee, **Jin Yu**, Timothy M. Lohman, Taekjip Ha*. PcrA helicase dismantles RecA filaments by reeling in DNA in uniform steps. *Cell*, 142:544-555, 2010.
11. **Jin Yu**, Jeff Moffitt, Craig Hetherington, Carlos Bustamante, and George Oster*. Mechanochemistry of a viral DNA packaging motor. *Journal of Molecular Biology*, 400:186-203, 2010.
10. Shuxun Cui, **Jin Yu**, Ferdinand Kühner, Klaus Schulten, and Hermann E. Gaub*. Double stranded DNA dissociates into single strands when dragged into a poor solvent. *Journal of the American Chemical Society*, 129:14710-14716, 2007.
9. Sungchul Hohng, Ruobo Zhou, Michelle K. Nahas, **Jin Yu**, Klaus Schulten, David M. J. Lilley, and Taekjip Ha*. Mapping the two-dimensional reaction landscape of Holliday junction via dynamic fluorescence-force spectroscopy. *Science*, 318:279-283, 2007.
8. **Jin Yu**, Taekjip Ha, and Klaus Schulten*. How directional translocation is regulated in a DNA helicase motor. *Biophysical Journal*, 93:3783-3797, 2007.
7. Markus Dittrich, **Jin Yu**, and Klaus Schulten*. PcrA helicase, a molecular motor studied from the electronic to the function level. *Atomistic Approaches in Modern Biology. Topics in Current Chemistry*, 268: 319-347, Springer, 2006.
6. **Jin Yu**, Taekjip Ha, and Klaus Schulten*. Structure-based model of the stepping motor of PcrA helicase. *Biophysical Journal*, 91:2097-2114, 2006.
5. **Jin Yu**, Andrea J. Yool, Klaus Schulten, and Emad Tajkhorshid*. Mechanism of gating and ion conductivity of a possible tetrameric pore in Aquaporin-1. *Structure*, 14:1411-1423, 2006.
4. **Jin Yu**, Taekjip Ha, and Klaus Schulten*. Conformational model of the Holliday junction transition deduced from molecular dynamics simulations. *Nucleic Acids Research*, 32:6683-6695, 2004.

3. **Jin Yu** and Guozhen Wu*. The Lyapunov analysis of the highly excited bend motion of acetylene. *Chemical Physics Letters*, 343: 375-382, 2001.
2. **Jin Yu** and Guozhen Wu*. Classical characters of highly bend dynamics of acetylene in two coupled SU(2) coset spaces. *Journal of Chemical Physics*, 113:647-652, 2000.
1. **Jin Yu**, Songtao Li and Guozhen Wu*. Multifractal analysis for the eigencoefficients of the eigenstates of highly excited vibration. *Chemical Physics Letters*, 301:217-222, 1999.