



Tailin Wu

Department of Physics, MIT

Email: tailin@mit.edu

Education

- 09/2012— **Department of Physics, MIT**
First-year graduate student
- 09/2008—07/2012 **Department of Physics, Peking University, China**
B.S. in Physics, July 2012

Research Experiences

- 04/2010—06/2012 Center for Theoretical Biology, Peking University.
Advisor: Prof. Qi Ouyang(Beida), Prof. Yuhai Tu(IBM Watson Research Center)
- Developed a pathway-based model for *E. coli* chemotaxis that overcomes the drawbacks of dominant Keller-Segel chemotaxis equation. Using the model we discovered several *E. coli*'s population behaviors and revealed their molecular origin. Published in *Phys. Rev. Lett.*
- 04/2010—06/2012 Center for Microfluidics and Nanotechnology in State Key Laboratory for Artificial Microstructures and Mesoscopic Physics. Advisor: Prof. Qi Ouyang
- Investigate bacterial response to spatial-temporally varying stimuli. Showed the inconsistency between experiment and the Keller-Segel chemotaxis equation. Published in *Phys. Rev. Lett.*
 - Designed microfluidic chips that generate travelling waves of attractant concentration in a circular channel to study the backward drifting in bacterial chemotaxis.
- 09/2011—12/2011 Material experiments in *Advanced Physics Experiments*, Advisor: Prof. Yue Wang
- Grew MgB_2 epitaxially on Al_2O_3 substrate by hybrid physical-chemical vapor deposition method. Perform SEM observation, R-T measurements and X-ray diffraction analysis on the ultrathin MgB_2 film.

Publications

- Pathway-based mean-field model for *Escherichia coli* chemotaxis
Guangwei Si, **Tailin Wu**, Qi Ouyang, and Yuhai Tu
Phys. Rev. Lett., 109, 048101 (2012)
- Frequency-Dependent *Escherichia coli* Chemotaxis Behavior
Xuejun Zhu, Guangwei Si, NianPei Deng, Qi Ouyang, **Tailin Wu**, Zhuoran He, Lili Jiang, Chunxiong Luo, and Yuhai Tu
Phys. Rev. Lett. 108, 128101 (2012)

Research Techniques

C/C++ Language, MATLAB 7.10, Mathematica 8.0, Maple 15, LabVIEW
Combined programming of VC++ and MATLAB

Professional Conferences

- 07/2011 Summer School on Topological Quantum Computation, Beijing International Center for Mathematical Research, Beijing, China
- 07/2011 Summer School on Frontiers of Quantum Information Science, Institute for Interdisciplinary Information Sciences, Tsinghua University, Beijing, China



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Honors & Awards

- 10/2011 Chinese National Scholarship
- 10/2011 All-round Excellent Student of Peking University (Top 5%)
- 10/2010 Tung & Orient Overseas Container Line Ltd. Scholarship
- 04/2010 National Undergraduate Endowment for Innovational Research
- 10/2009 Dean's Award for Academic Excellence of Peking University (Top 2%)
- 10/2009 Samsung Scholarship
- 10/2008 Freshman Scholarship of Peking University

- 04/2011 Bronze Medal in the 2nd National Undergraduate Mathematics Contest (Finals)
- 12/2010 First Prize in the 2nd National Undergraduate Mathematics Contest (Beijing)
- 12/2009 Second Prize in the 26th National Undergraduate Physics Contest
- 09/2007 First Prize in the 24th National Mathematics Olympiad in Guangxi Province
- 11/2006 Bronze Medal in the 6th National Western Mathematics Competition

Activities and Affiliations

- 10/2009 Member of the Beida Team in National College Chess Tournament in Nanjing
- 01/2009 Co-organized the five-department singing competition in Peking University
- 2009-2012 Study Secretary in Class 2008-01 of Physics Department of Peking University
- 06/2011 Invited seniors to introduce their experience in application and give advice to my class.
- 01/2011 Organized the New Year party in my class
- 04/2010 Invited seniors to introduce their experience on undergraduate research
- 10/2009—06/2010 Core member in the IEEE Peking University Branch
- 05/2010 In charge of the association's exhibition in the annual May 4th Cultural Festival in Peking University.
- 05/2010 Co-organized the association's exhibition in the Peking University library.
- 04/2010 Co-organized the 7th "Campfire Story" on how to adapt after changing one's profession.
- 03/2010 Co-organized the 6th "Campfire Story" on career orientation and job strategy guidance.