

Chun-Chung Chen

Curriculum Vitæ

Institute of Physics, Academia Sinica
128 Sec. 2, Academia Rd., Nangang Dist.
Taipei, Taiwan 11529
☎ +886-988310981
✉ cjj@phys.sinica.edu.tw
<https://ccdw.org/~cjj/>

Education

- 1996–2002 **Ph.D. in Physics**, *University of Washington*, Seattle, Washington, USA.
Thesis: Understand avalanche systems through underlying interface dynamics
Advisor: Prof. Marcel den Nijs
- 1994–1996 **M.S. in Physics**, *University of Washington*, Seattle, Washington, USA.
- 1988–1992 **B.S. in Physics**, *National Taiwan University*, Taipei, Taiwan.
Advisor: Prof. Ting-Wai Chiu

Employment

- 1991–1992 **Undergraduate Research Assistant**, *National Taiwan University*.
with Prof. Ting-Wai Chiu on Dirac propagators in external fields
- 1992–1994 **Second Lieutenant**, *R.O.C. Army, Taiwan*.
Maintenance officer of Nike Hercules missile system
- 1994–2002 **Graduate Teaching Assistant**, *University of Washington*.
Lab instructor for freshman labs, electronics lab, and modern physics lab
Grader for freshman physics, statistical mechanics, advanced quantum, and advanced classical mechanics
- 1997–2002 **Graduate Research Assistant**, *University of Washington*.
with Prof. Marcel den Nijs on interface growth models and self-organized criticality
- 2003–2006 **Research Associate**, *Case Western Reserve University*.
with Prof. Elena E. Dormidontova on statistical physics of reversibly associated polymers
- 2006–2009 **Research Associate**, *University of Pittsburgh*.
with Prof. David Jasnow on theoretical biophysics
- 2009–2012 **Assistant Research Scholar**, *National Center for Theoretical Sciences*.
in Physics Division focus on theoretical biophysics
- 2011–2012 **Part-Time Faculty**, *Department of Physics, National Tsing Hua University*.
teaching Computation for Physics in Springs
- 2013–2019 **Research Scientist**, *Institute of Physics, Academia Sinica*.
Active and Biological Systems group
- 2019–present **Postdoctoral Researcher**, *National Yang-Ming University*.
with Prof. Cheng-Chang Lien on theoretical and computational neuroscience

Teaching

- 2011, 2012 **Computation for Physics**, *National Tsing Hua University*.
Spring, Undergraduate, Physics

- 2011 **Second NCKU Computation Summer Camp**, *National Cheng Kung University*.
August 10–20: *Monte Carlo Approach to Condensed Matter Systems*
- 2012 **2012 Taiwan Cloud-Computational Physics Summer School**, *National Changhua University of Education*.
August 1–11: *Computational Approach to Statistical Physics*

Research Topics

- Computational modeling of spiking neuronal networks; artificial neural networks; restricted Boltzmann machines; Monte Carlo simulations; coarse-grained polymer modeling; statistical modeling; differential equation systems, agent-based modeling
- Biophysics computational neuroscience; neural plasticity; evolutionary dynamics
- Polymer ring-chain equilibrium; metallocsupramolecular polymers; polymer brushes; targeting polymer nanoparticles; exchange kinetics of diblock copolymer micelles
- Physics non-equilibrium critical phenomena; direct percolation; interface growth models; contact processes; self-organized criticality; granular avalanches

Computational Skills

- | | | | |
|-------------|-------------------------------------|-------------|---|
| Programming | C++, C, Java, FORTRAN, Pascal | GUI toolkit | GTK+, gtkmm, OpenGL, WebGL |
| Scripting | Python, BASH, JavaScript, PHP, Perl | Computing | MPI, HDF5, GNU autotools, PBS(Torque), Condor |
| Scientific | MATLAB, Mathematica, MCell | Other | HTML5, Drupal, XSLT, AJAX, MySQL |

Extra Curriculum

- 1986–1987 **President**, *Electronics Industry Study Club*, Taipei Municipal Chien Kuo High School.
- 1988–1991 **Student Lecturer**, *Computer Study Club*, National Taiwan University.
Subjects: programming, data structure, algorithmics
- 1990–1991 **Student Lecturer**, *Rocket Club*, National Taiwan University.
Subject: electronics
- 1991 **Editor**, *Space Time*, the periodical of the *Society of Physics Students*, National Taiwan University.
- 1994–1996 **Communication Officer**, **Web Master**, *Chinese Social Betterment Society*, University of Washington.

Publications

- [1] *Active width at a slanted active boundary in directed percolation*
Chun-Chung Chen, Hyunggyu Park and Marcel den Nijs, *Physical Review E* **60**, 2496 (1999)
- [2] *Interface view of directed sandpile dynamics*
Chun-Chung Chen and Marcel den Nijs, *Physical Review E* **65**, 031309 (2002)
- [3] *Directed avalanche processes with underlying interface dynamics*
Chun-Chung Chen and Marcel den Nijs, *Physical Review E* **66**, 011306 (2002)
- [4] *Cohesion-induced deepening transition of avalanches*
Chun-Chung Chen, *Physical Review E* **66**, 061304 (2002)
- [5] *Ring-chain equilibrium in reversibly associated polymer solutions: Monte Carlo simulations*
Chun-Chung Chen and Elena E. Dormidontova, *Macromolecules* **37**, 3905 (2004)
- [6] *Supramolecular polymer formation by metal-ligand complexation: Monte Carlo simulations and analytical modeling*
Chun-Chung Chen and Elena E. Dormidontova, *Journal of the American Chemical Society* **126**, 14972 (2004)
- [7] *Architectural and structural optimization of the protective polymer layer for enhanced targeting*
Chun-Chung Chen and Elena E. Dormidontova, *Langmuir* **21**, 5605 (2005)
- [8] *Monte Carlo simulations of end-adsorption of head-to-tail reversibly associated polymers*
Chun-Chung Chen and Elena E. Dormidontova, *Macromolecules* **39**, 9528 (2006)
- [9] *Effect of orientational specificity of complexation on the behavior of supramolecular polymers: theory and simulation*
Matthew C. Hagy, Chun-Chung Chen and Elena E. Dormidontova, *Macromolecules* **40**, 3408 (2007)
- [10] *Metabolic implications for the mechanism of mitochondrial endosymbiosis and human hereditary disorders*
Benjamin Lovegren de Bivort, Chun-Chung Chen, Fabrizio Perretti, Giacomo Negro, Thomas M. Philip and Yaneer Bar-Yam, *Journal of Theoretical Biology* **248**, 26 (2007)
- [11] *Reversible association and network formation in 3:1 ligand-metal polymer solutions*
Shihu Wang, Chun-Chung Chen and Elena E. Dormidontova, *Soft Matter* **4**, 2039 (2008)
- [12] *Mean-field theory of a plastic network of integrate-and-fire neurons*
Chun-Chung Chen and David Jasnaw, *Physical Review E* **81**, 011907 (2010)
- [13] *Event-driven simulations of a plastic, spiking neural network*
Chun-Chung Chen and David Jasnaw, *Physical Review E* **84**, 031908 (2011)
- [14] *Reconstruction of network structures from repeating spike patterns in simulated bursting dynamics*
Hao Song, Chun-Chung Chen, Jyh-Jang Sun, Pik-Yin Lai and C. K. Chan, *Physical Review E* **90**, 012703 (2014)

- [15] *Determination of melting temperature and temperature melting range for DNA with multi-peak differential melting curves*
Dmitri Y. Lando, Alexander S. Fridmana, Chun-Ling Chang, Inessa E. Grigoryan, Elena N. Galyuk, Oleg N. Murashko, *Chun-Chung Chen* and Chin-Kun Hu, *Analytical Biochemistry* **479**, 28 (2015)
- [16] *Adaptive synchronization and anticipatory dynamical systems*
Ying-Jen Yang, *Chun-Chung Chen*, Pik-Yin Lai and C. K. Chan, *Physical Review E* **92**, 030701 (2015)
- [17] *Propagation and synchronization of reverberatory bursts in developing cultured networks*
Chih-Hsu Huang, Yu-Ting Huang, *Chun-Chung Chen* and C. K. Chan, *Journal of Computational Neuroscience* **42**, 177 (2017)
- [18] *Variation approach to error threshold in generic fitness landscape*
Ching-I Huang, Min-Feng Tu, Hsiu-Hau Lin and *Chun-Chung Chen*, *Chinese Journal of Physics* **55**, 606 (2017)
- [19] *Second derivative techniques in differential scanning calorimetry of DNA modified with platinum compounds*
Chun-Ling Chang, *Chun-Chung Chen*, Chin-Kun Hu and Dmitri Y. Lando, *Thermochimica Acta* **654**, 186 (2017)
- [20] *Characterization of Predictive Behavior of a Retina by Mutual Information*
Kevin Sean Chen, *Chun-Chung Chen* and C. K. Chan, *Frontiers in Computational Neuroscience* **11**, 66 (2017)
- [21] *Positive feedback and synchronized bursts in neuronal cultures*
Yu-Ting Huang, Yu-Lin Chang, *Chun-Chung Chen*, Pik-Yin Lai and C. K. Chan, *PLoS ONE* **12**, e0187276 (2017)

Proceeding

- [1] *Computer modeling of reversible association in metallo-supramolecular polymers*
Chun-Chung Chen and Elena E. Dormidontova, *Polymer Preprints* **45**, 391 (2004)
- [2] *Computer modeling of reversible adsorption of head-to-tail associating polymers*
Elena E. Dormidontova and *Chun-Chung Chen*, *Polymeric Materials: Science & Engineering* **90**, 370 (2004)
- [3] *RGB algorithm for spatial evolutionary game theory with finite populations*
Ching-I Huang, Hsiu-Hau Lin and *Chun-Chung Chen*, *Evolutionary Computation (CEC)*, 2015 IEEE Congress on , 1521 (2015)
- [4] *Active Prediction in Dynamical Systems*
Chun-Chung Chen, Kevin Sean Chen and C. K. Chan, *Neural Information Processing* , 632 (2017)

* See <http://ccdw.org/~cjj/about/publst> for a comprehensive list.

Revised: April 22, 2020