BENJAMIN K CHANG

Research Assistant @ Institute of Atomic and Molecular Science, Academi Sinica, Taiwan

bkchang8@gmail.com ♢ https://bkchang.github.io/

Chinese Name: 張光遠 (Chang, Kuang-Yuan)

EDUCATION

California Institute of Technology, Pasadena, CA, USA — Begins in Fall 2018
Ph.D. in Applied Physics

National Taiwan University, Taipei, Taiwan — Sep. 2015 - June. 2017
M.S. in Physics
Thesis: First-Principles Studies of Cubic Sb-Doped GeTe Compounds for Thermoelectric Applications
Advisor: Prof. Mei-Yin Chou

National Tsing Hua University, Hsinchu, Taiwan — Sep. 2011 - June. 2015
B.S. in Program of Physics and in Program of Materials Science
Minor in Computer Science

COMPUTING & PROGRAMMING SKILLS

Areas	First-Principles Computation, Machine Learning
Languages	C/C++, Python, Shell Script, PHP, SQL, Javascript, LabVIEW, MATLAB

PUBLICATIONS

· Deniz P. Wong, Masoud Aminzare, Chin-Sheng Pang, <u>Benjamin K. Chang</u>, Hsiang-Ting Lien, Sun-Tang Chang, Chia-Hua Chien, Yang-Yuan Chen, Ming-Wen Chu, Yaw-Wen Yang, Wen-Pin Hsieh, Gerda Rogl, Peter Rogl, Mei-Yin Chou, Li-Chyong Chen, and Kuei-Hsien Chen. Boosting zT above 2.5: Temperature-Induced Valence Band Convergence in GeTe-rich Ge-Sb-Te Thin Film. In submission.

· <u>Benjamin K. Chang</u> and Mei-Yin Chou. First-Principles Studies of Cubic Sb-Doped GeTe for Thermoelectric Applications. In preparation.

WORK EXPERIENCE (RESEARCH/TEACHING)

RA, IAMS, Academia Sinica	Part-Time: Feb. 2016 - Jul. 2017 ‖ Full-Time: Aug. 2017 - Present
TA, Classical Mechanics (Graduate Level), Department of Physics, NTU	Sep. 2016 - Jan. 2017
TA, Quantum Physics (Undergrad Level), Department of Physics, NTU	Sep. 2016 - Jan. 2017

HONORS & AWARDS

· Gold Prize, Young Fellow Research Presentation Contest, *IAMS, Academia Sinica*	Nov. 2017
· Dean's Award, *College of Science, NTU*	Aug. 2017
· Phi Tau Phi Honorary Membership, *Phi Tau Phi Scholastic Honor Society*	Jun. 2016
· Elite Student Award, *College of Science, NTHU*	Apr. 2015
· Academic Achievement Award (2 times), *NTHU*	2013 - 2014
· Yu Kuo-Hua Scholarship, *Yu Kuo-Hua Foundation*	Dec. 2013
· Chun-Tsung Scholar, *Chun-Tsung Chinese Undergraduate Research Endowment*	Nov. 2013
· Dr. Chen Ke-Zhong Memorial Scholarship, *NTHU*	Oct. 2013
· Student Award, *IPCS, NTHU*	Nov. 2012

RESEARCH PROJECTS

Institute of Atomic and Molecular Sciences, Academia Sinica, Taiwan (PI: Prof. Mei-Yin Chou)

Thermoelectric Sb-Doped GeTe (Computational Study)   2016 - 2018
· Collaborated with Prof. Kuei-Hsien Chen's experimental group at IAMS.
· Showed that Sb-doping can stabilize the cubic-phase GeTe and induce superior thermoelectric property.
· Predicted that the choice of substrate used in the experiments affects the resulting thermoelectric performance of cubic Ge-Sb-Te samples. Later confirmed by experiments.
· Two papers on their way.

Size Effect in Cu Nanowires (Computational Study)   2017 - 2018
· Collaborated with Prof. King-Ning Tu's experimental group at NCTU and TSMC.
· Found no significant quantum confinement effect in Cu nanowires, which facilitated the experimental process.

Thermal Conductivity of Cmcm-SnSe (Computational Study)   2017
· Collaborated with a Ph.D. student at Georgia Tech.
· Used a machine learning method — compressive sensing — with nearly 10,000 atomic displacement data derived from first-principles, and identified the large anharmonic force constants of Cmcm-SnSe.

Department of Physics, Fudan University, Shanghai, China (PI: Prof. Jian Shen)

Giant Magnetoresistance of Organic Spin Valves (Experimental Study)   2013
· Assisted the growth of $Co/Alq_3/LSMO$ film using molecular beam epitaxy.
· Implemented a user-friendly monitor program.
· This work was finalized and published by the group in *Nature Communications* **5**:4396 (2014).

ONLINE COURSE CERTIFICATES (COURSERA)

· Machine Learning
· Neural Networks and Deep Learning
· Structuring Machine Learning Projects
· Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
· Biology Meets Programming: Bioinformatics for Beginners

RELEVANT COURSES

Physical Science	Mathematical & Computer Science
Quantum Mechanics	Calculus
Thermal Physics & Statistical Mechanics	Statistics (Probability)
Electromagnetism	Linear Algebra
Classical Mechanics	Applied Mathematics
Particle Physics	Algorithms
Materials Science & Engineering	Data Structures
Crystal Structure & Diffraction Theory	Scientific Computing