BENJAMIN K CHANG

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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, Benjamin K. Chang, 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.
- Benjamin K. Chang and Mei-Yin Chou. Realizing High Thermoelectric Performance in Cubic GeTe via Sb-Doping: A First-Prinicples Study. In submission.

WORK EXPERIENCE (RESEARCH/TEACHING)

RA, IAMS, Academia Sinica — Part-Time: Feb. 2016 - Jul. 2017 ‖ Full-Time: Aug. 2017 - Jul. 2018
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)

Sb-Doped GeTe as a Thermoelectric (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
Quantum Mechanics
Thermal Physics & Statistical Mechanics
Electromagnetism
Classical Mechanics
Particle Physics
Materials Science & Engineering
Crystal Structure & Diffraction Theory

Mathematical & Computer Science
Calculus
Statistics (Probability)
Linear Algebra
Applied Mathematics
Algorithms
Data Structures
Scientific Computing