

Curriculum Vitae—Hanghui Chen

CONTACT INFORMATION

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WORKING EXPERIENCES

- NYU-ECNU Institute of Physics, NYU Shanghai, Shanghai China.
Assistant Professor of Physics, September 2016 – current.
- Department of Physics, New York University, New York, NY, USA.
Global Network Assistant Professor, September 2016 – current.
- Department of Physics, Columbia University, New York, New York USA.
Collaborating with Professor Andrew Millis on correlated transition metal oxides in both bulk and nanostructured forms, July 2012 – August 2016.

EDUCATION

- Ph.D in Physics (2012), Yale University, New Haven, Connecticut USA.
Thesis: *First-principles Study of Complex Oxide Interfaces*.
Advisor: Professor Sohrab Ismail-Beigi.

- B.S. in Physics (2004), Peking University, Beijing, China.

PUBLICATIONS PUBLISHED WORKS

- C. Xia, Y. Chen and **H. Chen***, “Pressure-induced metal-insulator transition in oxygen-deficient LiNbO₃-type ferroelectrics”, *Journal of Physics: Condensed Matter* (accepted).
- J. Ma, R. Yang and **H. Chen***, “A large modulation of electron-phonon coupling and an emergent superconducting dome in doped ferroelectrics”, *Nature Communications* **12** 2314 (2021).
- D. Tian, Z. Liu, S. Shen, Z. Li, Y. Zhou, H. Liu, **H. Chen*** and P. Yu*, “Manipulating Berry curvature of SrRuO₃ thin films via epitaxial strain”, *Proceedings of the National Academy of Sciences of the United States of America* **118** e2101946118 (2021).
- W. Zhang, Y. Hu, C. Kuo, S. Kuo, Y. Fang, K. Lai, X. Liu, K. Yip, D. Sun, F. Balakirev, C. Lue, **H. Chen*** and S. K. Goh*, “Linear magnetoresistance with a universal energy scale in a strong-coupling superconductor”, *Physical Review B* **102** 241113(R), (2020).
- Y. Jiao, Y. Fang, J. Sun, B. Wang, Z. Yu, Y. Uwatoko, Y. Guo*, **H. Chen*** and J. Cheng*, “Coupled magnetic and structural phase transitions in antiferromagnetic polar metal Pb₂CoOsO₆”, *Physical Review B* **102** 144418, (2020).
- Z. Cui, A. J. Grutter, H. Zhou, H. Cao, Y. Dong, D. A. Gilbert, Y. Liu, J. Ma, Z. Hu, J. Guo, E. Arenholz, **H. Chen***, X. Zhai* and Y. Lu, “Correlation-driven eightfold magnetic anisotropy in a two-dimensional ferromagnetic monolayer”, *Sciences Advances* **15** eaay0114, (2020).
- Y. Gu, S. Zhu, X. Wang, J. Hu and **H. Chen***, “A substantial hybridization between correlated Ni-*d* orbital and itinerant electrons in infinite-layer nickelates”, *Communications Physics* **3** 84, (2020).

- Y. Fang, R. Yang and **H. Chen***, “Prediction of a multifunctional polar metal via first-principles high-throughput structure screening”, *Communications Materials* **1** 1, (2020).
- Y. Fang, R. Yang and **H. Chen***, “The complex non-collinear magnetic orderings in Ba_2YOsO_6 : a new approach to tuning spin-lattice interactions and controlling magnetic orderings in frustrated complex oxides”, *Journal of Physics: Condensed Matter* **31** 44, (2019).
- C. Xia, Y. Chen, and **H. Chen***, “Coexistence of polar displacements and conduction in doped ferroelectrics: An *ab initio* comparative study”, *Physical Review Materials* **3** 054405, (2019).
- **H. Chen***, “Magnetically driven orbital-selective insulator-metal transition in double perovskite oxides”, *npj Quantum Materials* **3** 57, (2018).
- E. I. P. Aulestia, Y. W. Cheung, Y.-W. Fang, J. He, K. Yamaura, K.T. Lai, S. K. Goh* and **H. Chen***, “Pressure-induced enhancement of non-polar to polar transition temperature in metallic LiOsO_3 ”, *Applied Physical Letters* **113** 012902, (2018).
- K. Ahmadi-Majlan, T. Chen, Z. H. Lim, P. Conlin, R. Hensley, M. Chrysler, D. Su, **H. Chen**, D. P. Kumah, J. H Ngai*, “Tuning metal-insulator behavior in $\text{LaTiO}_3/\text{SrTiO}_3$ heterostructures integrated directly on Si(100) through control of atomic layer thickness”, *Applied Physical Letters* **112** 193104, (2018).
- **H. Chen*** and A. J. Millis, “Design of new Mott multiferroics via complete charge transfer: promising candidates for bulk photovoltaics”, *Scientific Report* **7** 6142, (2017).
- X. Chen, X. Zhang, M. A. Koten, **H. Chen**, Z. Xiao, L. Zhang, J. E. Shield, P. A. Dowben and X. Hong*, “Interfacial Charge Engineering in Ferroelectric-Controlled Mott Transistors”, *Advanced Materials* **29** 31, (2017).
- **H. Chen** and A. J. Millis, “Charge transfer driven emergent phenomena in oxide heterostructures”, *Journal of Physics: Condensed Matter* **29** 243001, (2017).
 - An invited review paper.
- **H. Chen** and A. J. Millis, “Phase diagram of $\text{Sr}_{1-x}\text{Ba}_x\text{MnO}_3$ as a function of chemical doping, epitaxial strain, and external pressure”, *Physical Review B* **94** 165106, (2016).
- **H. Chen** and A. J. Millis, “Comparative study of exchange-correlation functionals for accurate predictions of structural and magnetic properties of multiferroic oxides”, *Physical Review B* **93** 205110, (2016).
- **H. Chen** and A. J. Millis, “Antisite defects at oxide interfaces”, *Physical Review B* **93** 104111, (2016).
- **H. Chen** and A. J. Millis, “Spin-density functional theories and their $+U$ and $+J$ extensions: A comparative study of transition metals and transition metal oxides”, *Physical Review B* **93** 045133, (2016).
- A. S. Disa, D. P. Kumah, A. Malashevich, **H. Chen**, D. A. Arena, E. D. Specht, S. Ismail-Beigi, F. J. Walker and C. H. Ahn, “Inter-elemental orbital tuning in oxides”, *Physical Review Letters* **114** 026801, (2015).
 - Confirms my previous theoretical prediction (*PRL* **110** 186402, (2013)).
 - Selected as an Editor’s Suggestion in *Phys. Rev. Lett.*

- Highlighted as an APS *Physics Viewpoint*.
- Highlighted as an Editor's choice in *Science*.
- **H. Chen**, H. Park, A. J. Millis and C. A. Marianetti, "Charge transfer across transition metal oxide interfaces: emergent conductance and electronic structure", *Physical Review B* **90** 245138, (2014).
- M. S. J. Marshall, A. Malashevich, A. S. Disa, M. G. Han, **H. Chen**, Y. Zhu, S. Ismail-Beigi, F. J. Walker and C. H. Ahn, "Conduction at a Ferroelectric Interface", *Physical Review Applied* **2** 051001, (2014).
- **H. Chen**, Q. Qiao, M. S. J. Marshall, A. B. Georgescu, A. Gulec, P. J. Phillips, R. F. Klie, F. J. Walker, C. H. Ahn and S. Ismail-Beigi, "Reversible modulation of orbital occupations via an interface-induced polar state in metallic manganites", *Nano Letters* **14** 4965, (2014).
- D. P. Kumah, A. S. Disa, J. H. Ngai, **H. Chen**, A. Malashevich, J. W. Reiner, S. Ismail-Beigi, F. J. Walker and C. H. Ahn, "Tuning the structure of nickelates to achieve two-dimensional electron conduction", *Advanced Materials* **26** 1935, (2014).
- **H. Chen**, A. J. Millis, and C. A. Marianetti, "Engineering Correlation Effects via Artificially Designed Oxide Superlattices", *Physical Review Letters* **111** 116403, (2013).
- **H. Chen**, D. Kumah, A. Disa, F. Walker, C. Ahn and S. Ismail-Beigi, "Modifying the electronic orbitals of nickelate heterostructures via structural distortions", *Physical Review Letters* **110** 186402, (2013).
- **H. Chen** and S. Ismail-Beigi, "Ferroelectric control of magnetization in the manganites", *Physical Review B* **86** 024433, (2012).
- **H. Chen**, A.M. Kolpak and S. Ismail-Beigi, "First-principles study of electronic reconstructions of LaAlO₃/SrTiO₃ heterointerfaces and their variants", *Physical Review B* **82** 085430, (2010).
- **H. Chen**, A.M. Kolpak and S. Ismail-Beigi, "Electronic and Magnetic Properties of SrTiO₃/LaAlO₃ Interfaces from First Principles", *Advanced Materials* **22** 2281, (2010).
 - An invited review paper.
- **H. Chen**, A.M. Kolpak and S. Ismail-Beigi, "Fundamental asymmetry in interfacial electronic reconstruction between insulating oxides: An *ab initio* study", *Physical Review B* **79** 161402(R), (2009).
- "International Collaboration in Science and Technology between Governments" of Ministry of Science and Technology of Peoples Republic of China (2021)
- Open Grant of State Key Laboratory of Low-dimensional Quantum Physics at Tsinghua University (2020)
- The University Research Challenge Fund (URCF) of New York University (2019)
- General Program of National Natural Science Foundation of China (2017)
- Pujiang Talents Program of Science and Technology Commission Shanghai Municipality (2017)
- NYU-ECNU JRI Seed Grants for Research Collaboration (2017)
- Open Grant of Key Laboratory of Polar Materials and Devices at East China Normal University (2017)

GRANTS

CONFERENCE
INVITED TALKS

- “1st Forum of Materials Design and Intellectual Production” (September 2021; Shanghai, China)
- “2021 Materials Conference” (July 2021; Xiamen, China)
- “2021 International Workshop for Surfaces and Interfaces of Quantum Materials” (June 2021; Beijing, China)
- “2021 Electronic Materials and Applications” (January 2021; Orlando, USA)
- “7th Heavy Fermion Forum” (October 2020; Hefei, China)
- “KITS min-workshop on nickelate superconductivity” (June 2020; Beijing, China)
- “The 13th Pacific Rim Conference of Ceramic Societies” (October 2019; Okinawa, Japan)
- “International Focus Workshop Computational Approaches to Magnetic Systems” (August 2019; Daejeon, South Korea)
- “XXXI IUPAP Conference on Computational Physics” (July 2019; Hong Kong, China)
- “8th Chinese Forum for Young Scientists in Condensed Matter Physics” (November 2018; Shanghai, China)
- “2nd Fudan International Workshop on Complex Quantum Materials” (June 2018; Shanghai, China)
- “2017 Conference of Computational Physics of Shanghai Physical Society” (December 2017; Shanghai, China)

SEMINAR AND
COLLOQUIUM

- Department of Physics, Westlake University (July 2021; Hangzhou, China)
- Department of Physics, Tsinghua University (June 2021; Beijing, China)
- Department of Physics, Temple University (March 2021; Philadelphia, USA)
- Department of Physics, Tsinghua University (January 2021; Beijing, China)
- School of Physical Science and Technology, ShanghaiTech University (December 2019; Shanghai, China)
- Department of Physics, Southeast University (June 2019; Nanjing, China)
- Institute of Physics, Chinese Academy of Sciences (June 2019; Beijing, China)
- Department of Physics, The University of Science and Technology of China (December 2018; Hefei, China)
- Institute of Physics, Chinese Academy of Sciences (June 2018; Beijing, China)
- Department of Physics, Nanjing University (June 2018; Nanjing, China)
- Department of Physics, Fudan University (December 2017; Shanghai, China)
- Department of Physics, The Chinese University of Hong Kong (August 2017; Hong Kong, China)
- Department of Physics, East China Normal University (October 2016; Shanghai, China)
- Center for High Pressure Science and Technology Advanced Research (October 2016; Shanghai, China)

HONORS

- 2019 American Physical Society *Outstanding Referee*

SERVICE

- I organized the focus session “Oxide interfaces and heterostructure” of 2019 APS March Meeting.
- I have served as a referee for the following journals: Nature Nanotechnology, Nature Communications, Scientific Report, Physical Review Letters, Physical Review X, Physical Review B, Physica B and Journal of Physics: Condensed Matter.
- I organized “2018 International Conference on Emergent Phenomena in Quantum Materials” at NYU Shanghai.
- I organized the “Physics Seminars” at the NYU-ECNU Research Institute.
- I helped launch a new course of “Advanced physics experiment” at NYU Shanghai.
- I served in the Library Advisory Committee at NYU Shanghai.

REFERENCES AVAILABLE TO CONTACT

- Professor Sohrab Ismail-Beigi, Yale University
 - *Email:* sohrab.ismail-beigi@yale.edu
 - *Phone:* 203-432-2107
- Professor Andrew Millis, Columbia University
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