Bo-Yu Chen (Matt)

(+886) 965-712-239 • b12202023@ntu.edu.tw • https://phys-mattchen.github.io

EDUCATION

B.S., National Taiwan University — Aug. 2023 – present
- Studying in Department of Physics
- 1st place for undergraduate admission

Affiliated Senior High School of National Taiwan Normal University — Aug. 2020 – Jun. 2023
- Studied in computer science program; Major GPA: 100/98/100 (Math/Physics/Scale)
- Taipei City Mayor Award (top 1% of the school)

RESEARCH EXPERIENCE

Northwestern University, Department of Computer Science — Jan. 2023 – present
Advisors: Prof. Han Liu and Dr. Jerry Yao-Chieh Hu
- Undergraduate research at Modern Artificial Intelligence General Computer System (MAGICS) lab
- Established a principled framework for modern Hopfield models with non-parametric approach.
- Investigated sparse modern Hopfield to improve computational efficiency and theoretical properties.
- Introduce a time series prediction model based on the sparse Hopfield model.

Chung Yuan Christian University, Department of Electronic Engineering — Aug. 2021 – Jun. 2023
Advisors: Prof. Chiashain Chuang and Prof. Dung-Sheng Tsai
- Improved the performance of graphene-based sensors with the transfer-free process.
- Synthesis skills with various techniques: CVD, PVD, mechanically exfoliated method
- Experience in various characterizations and testing techniques: AFM, Raman, XRD

National Taiwan Normal University, Department of Physics — Oct. 2021 – May 2022
Advisors: Prof. Po-Han Lee and Prof. Yin-Kuo Wang
- Theoretically investigated reasonable 13 half-metallic ferrimagnetism in double perovskites.
- Proficiency in data analysis and programming: Matlab, VASP and VESTA

PAPERS & PUBLICATIONS (†Equal contribution)

About half the list below are journal papers, and the other half are full-length peer-reviewed papers with proceedings in top-tier venues in AI/ML, where conference publications are the norm.

1. J. Y.-C. Hu†, **B.-Y. Chen**†, D. Wu, H. Liu, "Non-parametric modern Hopfield models" (Preparing for AISTATS in October 2023)
2. D. Wu, W. Li, Jerry Y.-C. Hu, **B.-Y. Chen**, H. Liu "StanHop: Sparse Tandem Hopfield Model for Memory-Enhanced Time Series Prediction" (Ready for submission to ICLR in September 2023)
3. **B.-Y. Chen**, B.-W. Chen, W.-Y. Uen, P.-H. Lee, C. Chen, C. Chuang, D.-S. Tsai, "Air-stable high magnetoresistance at room temperature in nickel-catalyzed transfer-free graphene under a low magnetic field" (Under review by *Nanotechnology*). (2023)
4. J. Y.-C. Hu, D. Yang, D. Wu, C. Xu, **B.-Y. Chen**, H. Liu, "On sparse modern Hopfield model", Conference on Neural Information Processing Systems (*NeurIPS*), 2023
5. J.-W. Ci, **B.-Y. Chen**, Y.-C. Hung, H.-C. Wang, D.-S. Tsai, W.-Y. Uen, Y.-L. Zhong, J.-S. Wang, C.-T. Liang, C. Chuang, "Modulations for quantum electronic material transports by vacuum annealing methods" (Accepted to *Spin*)
6. **B.-Y. Chen**, P.-H. Lee, Y.-K. Wang, "First-Principles Study on Possible Half-Metallic Ferrimagnetism in Double Perovskites $Pb_2XX'O_6$ (X = Ti, Zr, Hf, V, Nb and Ta, X' = Tc, Ru, Os and Rh)", *Materials* 15(9), 3311. (2022)
7. **B.-Y. Chen**, B.-W. Chen, W.-Y. Uen, J.-W. Ci, P.-H. Lee, C. Chuang, D.-S. Tsai, "直接合成石墨烯於絕緣基板上之磁阻特性", *真空科技*. 35(2), 31-1~31-7. (2022) (Written in Chinese)
8. J.-W. Ci, **B.-Y. Chen**, C.-W. Kuo, H.-C. Wang, P.-Y. Lai, P.-W. Chen, Z.-Y. Fan, M.-T. Wu, J.-E. Huang, Y.-C. Hung, C.-H. Chen, P.-H. Lee, Y.-L. Zhong, J.-S. Wang, W.-Y. Uen, D.-S. Tsai, C.

Chuang, "量子電子材料真空熱退火電子傳輸調控", *真空科技*. 35(3), 29~36. (2022) (Written in Chinese)

CONFERENCE PRESENTATIONS

1. **B.-Y. Chen**, B.-W. Chen, J.-W. Ci, W.-Y. Uen, P.-H. Lee, C. Chen, C. Chuang, D.-S. Tsai, *Temperature-Dependent Magnetoresistance of Transfer-Free Graphene Grown by APCVD*, 13th Recent Progress in Graphene and Two-dimensional Materials Research Conference, Taipei, Taiwan, November 2022
2. **B.-Y. Chen**, P.-H. Lee, Y.-K. Wang, *Ab initio study on the growth mechanism of graphene on metal*, 2022 Annual Meeting of the Physical Society of Taiwan, Taipei, Taiwan, January 2022
3. **B.-Y. Chen**, P.-H. Lee, Y.-K. Wang, *Layer-dependent properties of $SnSe_2$ two dimensional materials*, 2022 Annual Meeting of the Physical Society of Taiwan, Taipei, Taiwan, January 2022