

Tan Tao-Lin

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Work Experience

- 2020/07 – present 📌 **Data Scientist**, Phison Electronics Corporation
- 2019/07 – 2020/06 📌 **Junior Data Engineer**, Commerce Connector GmbH, Asia Limited
- 2016/02 – 2016/06 📌 **Teaching Assistant of Classical Mechanics**, Department of Electrophysics, National Chiao Tung University

Education

- 2015 – 2018 📌 **M.Sc., Institute of Physics, National Chiao Tung University**
Thesis title: *Tensor Network Study of the $(1+1)$ -dimensional Thirring Model*.
Advisor: Prof. C.-J. David Lin
- 2011 – 2015 📌 **B.Sc., Department of Physics, National Chung Hsing University**
Independent study: *Monte Carlo simulation to 2D Ising model with Metropolis sampling*.
Advisor: Prof. Ming-Chiang Chung

Skills

- Languages 📌 Strong reading, writing and speaking competencies for English and Mandarin. Currently learning Japanese.
- Programming 📌 C++, JavaScript, \LaTeX , Python, shell script, SQL, ...
- Backend 📌 AWS, CI/CD, Databases, Data Lakes, Docker, ETL, serverless, Spark, unit test, Unix/Linux, web crawling
- Frontend 📌 React
- Numerical Methods 📌 Tensor Network, Distributed Computing, Anomaly Detection, Clustering, Monte Carlo, XGBoost, Bayesian Optimization, ...

Publications

Journal Articles

- 1 Bañuls, M., Cichy, K., Kao, Y.-J., Lin, C.-J., Lin, Y.-P., & **Tan, T.-L.** (2019). Phase structure of the $(1+1)$ -dimensional massive thirring model from matrix product states. *Physical Review D*, 100. [doi:10.1103/PhysRevD.100.094504](https://doi.org/10.1103/PhysRevD.100.094504)
- 2 Bañuls, M.-C., Cichy, K., Kao, Y.-J., Lin, C., Lin, Y.-P., & **Tan, T.-L.** (2017). Tensor network study of the $(1+1)$ -dimensional thirring model. *EPJ Web of Conferences*, 175. [doi:10.1051/epjconf/201817511017](https://doi.org/10.1051/epjconf/201817511017)

Conference Proceedings

- 1 Banuls, M., Cichy, K., Hung, H.-T., Kao, Y.-J., Lin, D., Lin, Y.-P., & **Tan, T.-L.** (2020). Phase structure and real-time dynamics of the massive thirring model in $1+1$ dimensions using the tensor-network method. (p. 022). [doi:10.22323/1.363.0022](https://doi.org/10.22323/1.363.0022)
- 2 Banuls, M.-C., Cichy, K., Kao, Y.-J., Lin, C.-J., Lin, Y.-P., & **Tan, T.-L.** (2019). Investigation of the $1+1$ dimensional thirring model using the method of matrix product states. (p. 229). [doi:10.22323/1.334.0229](https://doi.org/10.22323/1.334.0229)

Projects

- [tnpy](#): A python implementation of Matrix Product State algorithms.
- [HOTRG-2D-Ising](#): Higher-order Tensor Renormalization Group study to 2D classical Ising model (Jupyter notebook).
- [anko](#): A python implementation of anomaly detection algorithms.
- [binpr](#): Pattern recognition on the failed bins in silicon wafer based on OPTICS algorithm.

Miscellaneous Experience

Presentations

- 2018 ■ **2018 Annual Meeting of the Physical Society of Taiwan**. Title: *Tensor Network Study of the $(1+1)$ -dimensional Thirring Model*.
- 2017 ■ **35th International Symposium On Lattice Field Theory**. Title: *Tensor Network study of the $(1+1)$ -dimensional Thirring Model*.
- **The 12th particle physics phenomenology (ppp12) workshop**. Title: *Tensor Network study of the $(1+1)$ -dimensional Thirring Model*.

Research Visiting

- 2017 ■ **DAMTP, Cambridge University**. Invited by: *Prof. Matthew Wingate*
- 2016 ■ **Department of Physics, Goethe University Frankfurt**. Invited by: *Dr. Krzysztof Cichy*

Business Trip

- 2019 ■ **Annual meeting at Commerce Connector GmbH headquarters, Stuttgart**.

Conferences and Workshops

- 2021 ■ **NVIDIA GPU Technology Conference 2021**
- **Workshop on Non-equilibrium Systems and Machine Learning**
- **AWS AI/ML Web Day Taiwan**
- 2020 ■ **AWS re:Invent**
- **AWS Dev Day Taipei**
- **AWS machine learning invention workshop**
- 2018 ■ **Mini-workshop on composite Higgs models and lattice gauge theory**
- **NVIDIA Deep Learning Workshop**
- **2018 Annual Meeting of the Physical Society of Taiwan**
- 2017 ■ **NCTS Annual Theory Meeting 2017: Particles, Cosmology and Strings**
- **Workshop on hadron physics and QCD**
- **35th International Symposium On Lattice Field Theory**
- **The 12th particle physics phenomenology (ppp12) workshop**
- **Third TEQMS Hackathon**
- 2016 ■ **NCTS Annual Theory Meeting 2016: Quantum Simulations and Numerical Studies in Many-Body Physics**

Miscellaneous Experience (continued)

- The fourth workshop on Tensor Network States: Algorithms and Applications
- 2015 ■ Workshop on non-perturbative QFT and LHC physics
- Second Hackathon for NCTS Thematic Group on Topology and Entanglement in Quantum Many-body Systems
- 2014 ■ AMO Summer School

Journal Clubs

- 2016 ■ Conjugate Gradient Descent
- Lattice Quantum Chromodynamics
- 2015 ■ Tensor Network Methods
- 2014 ■ Topological Insulators and Topological Superconductors

Poster

- 2016 ■ The fourth workshop on Tensor Network States: Algorithms and Applications. Title: *Tensor network study to $(1+1)$ -dimensional field theory: The quantum soliton states in sine-Gordon theory*