

# Haoen Li

Undergraduate Student, Tsinghua University

[Google Scholar](#)

Latest Update: July 2024

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Personal Homepage: <https://haoen2021.github.io/>

## Biography

I was born in Sep. 2003 in Huaibei, Anhui.

I am now a rising senior undergraduate student at Dept. of Chemistry, Tsinghua University.

## Education

- Tsinghua University** Beijing, China  
*B.Sc. in **Chemistry** and **Mathematics** (as secondary major)* 09/2021 - 06/2025 (expected)  
– Advisor: Hanshi Hu, GPA: 3.94/4.00

## Professional Experiences

- University of California, Berkeley** Berkeley, CA, USA  
*Visiting Undergraduate Student in Department of Mathematics* 07/2024 - 09/2024  
– Advisor: Lin Lin

## Research Interest

Electronic structure theory; Quantum many-body physics/chemistry; Quantum algorithms for science; Numerical Analysis; etc.

My undergraduate learning notes (mainly on topics broadly relevant to mathematics and computational quantum physics) can be found on my personal homepage: <https://haoen2021.github.io/notes.html>

## Publications and Preprints

- Hao-En Li**, Xiang Li, Jia-Cheng Huang, Guang-Ze Zhang, Zhu-Ping Shen, Chen Zhao, Jun Li, and Han-Shi Hu, “[Variational Quantum Imaginary Time Evolution for Matrix Product State Ansatz with Tests on Transcorrelated Hamiltonians](#),” [arXiv:2407.10523]
- Xiang Li, Jia-Cheng Huang, Guang-Ze Zhang, **Hao-En Li**, Zhu-Ping Shen, Chen Zhao, Jun Li, and Han-Shi Hu, “[Improved Optimization for the Neural-network Quantum States and Tests on the Chromium Dimer](#),” **J. Chem. Phys.** **2024**, **160**, 231402. [arXiv:2404.09280]
- Xiang Li, Jia-Cheng Huang, Guang-Ze Zhang, **Hao-En Li**, Chang-Su Cao, Dingshun Lv, and Han-Shi Hu, “[A Nonstochastic Optimization Algorithm for Neural-Network Quantum States](#),” **J. Chem. Theory Comput.** **2023**, **19**, 8156. [arXiv:2305.12776]

## Scholarships and Awards

- **The Annual Figure of Department of Chemistry, Tsinghua University** (Apr. 2024)
- **Jiang Nanxiang Scholarship:** Highest honors for 3rd-year undergraduates at Tsinghua,  $\leq 1$  student per major (Oct. 2023)
- **Youth Student Basic Research Program of National Natural Science Foundation of China:** This is the first time the NSFC has piloted a program to support undergraduate students. (Sep. 2023)
- **Excellent Student Cadre of Tsinghua University** (Sep. 2023)
- **Scholarship of Tsinghua Xuetaang Talents Program:** Awarded to undergraduate students who are recruited and trained in [Tsinghua Xuetaang Talents Program](#) (Dec. 2022)
- **Excellent Comprehensive Scholarship of Tsinghua University** (Dec. 2022)
- **Excellent Academic Scholarship of Tsinghua University** (Dec. 2022)
- **Second-Class Freshmen Scholarship of Tsinghua University** (Sep. 2021)
- **Gold in Chinese Chemistry Olympiad (final), 2020 (34th CChO):** Before entering Tsinghua, I competed in the olympiad of chemistry. I was awarded gold in the 34th CChO and was selected into the national training team. (Nov. 2020)

## Selected Coursework

$\Delta$  for graduate courses.

Course Title	Credit	Grade	Grade Point
Calculus A(1)	5	A	4.0
Linear Algebra	4	A	4.0
Calculus A(2)	5	A–	4.0
Advanced Topics in Linear Algebra	2	A	4.0
Physical Chemistry H1	4	A–	4.0
<b>Abstract Algebra</b>	4	A	4.0
<b>Measures and Integral</b>	4	A+	4.0
<b>Complex Analysis</b>	4	A–	4.0
Physical Chemistry H2	4	A–	4.0
<b>Computational Quantum Physics<math>\Delta</math></b>	3	A+	4.0
<b>Functional Analysis(I)</b>	4	A	4.0
<b>Numerical Analysis</b>	4	A–	4.0
<b>Probability and Stochastic Processes</b>	3	A–	4.0
Physical Chemistry H3	4	A–	4.0
<b>Probability Theory(1)</b>	4	A	4.0

## Serving Experiences

- (2023.5 - 2024.5) Head of the **Academic and Student Rights Department** of the Student Union at Department of Chemistry, Tsinghua University (Excellent Student Cadre of Tsinghua University in 2023)
- (2022.10 - Now) Assistant at **Drop-in Tutoring for STEM Courses** of **Tsinghua University Center for Student Learning and Development** (Excellent assistant in 2023 Spring)
- (2023.8 - 2024.8, expected) Editor of “Chemistry Xuetang” (the **WeChat official account** publicity platform of Tsinghua Xuetang Chemistry Program)