Huanqian LOH

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ACADEMIC EXPERIENCE

President's Assistant Professor, Department of Physics and Principal Investigator, Centre for Quantum Technologies, National University of Singapore — 2017-Present

Postdoctoral research fellow, Centre for Quantum Technologies, National University of Singapore and Massachusetts Institute of Technology (Group of Martin Zwierlein) — 2015-2017

Postdoctoral research fellow, Centre for Quantum Technologies, National University of Singapore (Group of Dzmitry Matsukevich) — 2013-2014

EDUCATION

Ph.D. Physics, University of Colorado at Boulder — 2013
Thesis: Search for an Electron Electric Dipole Moment with Trapped Molecular Ions
Advisor: Eric Cornell

S.B. Physics, Massachusetts Institute of Technology — 2006
Thesis: Applications of Correlated Photon Pairs: Sub-Shot Noise Interferometry and Entanglement
Advisor: Vladan Vuletić

SELECTED FELLOWSHIPS, AWARDS, AND HONORS

Asia's Top 100 Scientists, Asian Scientist Magazine — 2021

L'Oreal-UNESCO International Rising Talent — 2020
Top 15 global awardees selected from 260 national and regional fellows

World Economic Forum Young Scientist — 2019
Top 21 global awardees under age 40

World Economic Forum Global Future Council on Quantum Computing, Invited Member — 2019-2021

L'Oréal-Singapore For Women In Science National Fellowship — 2018

Singapore National Research Foundation (NRF) Fellowship — 2018
Five-year fellowship, total award amount SGD 2.9 million

MIT Rising Star in Physics — 2016

LeRoy Apker Award for undergraduate thesis, American Physical Society — 2006
Sole winner (representing MIT) amongst competing students from Ph.D.-granting institutions

Malcolm Cotton Brown Award, MIT — 2006

Phi Beta Kappa and Sigma Pi Sigma Honor Societies — 2006

Josephine de Kármán Fellowship, Josephine de Kármán Foundation — 2005

Top Prize, National Science Talent Search, Singapore — 2001
Full scholarship for undergraduate and PhD studies (accepted)

PUBLICATIONS

Highlights: 3 Science papers, 3 PRL Editors' Suggestions, 1 JCP Annual Editors' Choice

1. W. Tian, W. J. Wee, A. Qu, B. J. M. Lim, P. R. Datla, V. P. W. Koh and **H. Loh**, "Parallel assembly of arbitrary defect-free atom arrays with a multi-tweezer algorithm", arXiv:2209.08038 (2022).

2. C. Becher, W. Gao, S. Kar, C. Marciniak, T. Monz, J. G. Bartholomew, P. Goldner, **H. Loh**, E. Marcellina, K. E. J. Goh, T. S. Koh, B. Weber, Z. Mu, J.-Y. Tsai, Q. Yan, S. Gyger, S. Steinhauer, V. Zwiller, "2023 roadmap for materials for quantum technologies", Materials for Quantum Technology, DOI 10.1088/2633-4356/aca3f2 (2022).

3. M. M. Aliyu, L. Zhao, X. Q. Quek, K. C. Yellapragada and **H. Loh***, "D1 magic wavelength tweezers for scaling atom arrays", Physical Review Research 3, 043059 (2021).
   Featured as CQT Highlight
   *Invited speaker for the American Physical Society March Meeting (2022), 4th Asia-Pacific Workshop on Trapped Quantum Systesm (APTQS 2022), Atomtronics 2021, 21st Asian Quantum Information Science Conference (2021)

4. J. Decamp, J. Gong, **H. Loh** and C. Miniatura, "A universal graph description for one-dimensional exchange models", Physical Review Research 2, 033297 (2020).

5. Z. Z. Yan, J. W. Park, Y. Ni, **H. Loh**, S. Will, T. Karman and M. W. Zwierlein, "Resonant dipolar collisions of ultracold molecules induced by microwave dressing", Physical Review Letters 125, 063401 (2020).

6. J. Decamp, J. Gong, **H. Loh** and C. Miniatura, "Graph theory treatment of one-dimensional strongly repulsive fermions", Physical Review Research 2, 023059 (2020).

7. S. Ding, G. Maslennikov, R. Hablutzel, **H. Loh** and D. Matsukevich, "A quantum parametric oscillator with trapped ions", Physical Review Letters 119, 150404 (2017).
   Featured as CQT Highlight

8. J. W. Park, Z. Z. Yan, **H. Loh***, S. A. Will and M. W. Zwierlein, "Second-scale nuclear spin coherence time of trapped ultracold $^{23}Na^{40}K$ molecules", Science 357, 372 (2017).
   Featured in MIT News
   *Invited speaker on this work for the "Hot Topics" session in the Annual Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP, 2016). Invited speaker for Gordon Research Seminar on Quantum Science (2016).

9. S. A. Will, J. W. Park, Z. Z. Yan, **H. Loh** and M. W. Zwierlein, "Coherent microwave control of ultracold $^{23}Na^{40}K$ molecules", Physical Review Letters 116, 225306 (2016).

10. **H. Loh**, S. Ding, R. Hablutzel, G. Maslennikov and D. Matsukevich, "Zeeman-splitting-assisted quantum logic spectroscopy of trapped ions", Physical Review A 90, 061402(R) (2014).

11. S. Ding, **H. Loh**, R. Hablutzel, M. Gao, G. Maslennikov and D. Matsukevich, "Microwave control of trapped-ion motion assisted by a running optical lattice", Physical Review Letters 113, 073002 (2014).

12. K.-K. Ni, **H. Loh**, M. Grau, K. C. Cossel, J. Ye and E. A. Cornell, "Quantum-state detection of trapped HfF^+ by photodissociation", Journal of Molecular Spectroscopy 300, 12 (2014).

13. **H. Loh**, K. C. Cossel, M. Grau, K.-K. Ni, E. R. Meyer, J. L. Bohn, J. Ye and E. A. Cornell, "Precision spectroscopy of polarized molecules in an ion trap", Science 342, 1220 (2013).
    Featured in Science Perspective, ScienceDaily news and JILA news

14. **H. Loh**, R. P. Stutz, T. S. Yahn, H. Looser, R. W. Field and E. A. Cornell, "REMPI spectroscopy of HfF", Journal of Molecular Spectroscopy 276, 49 (2012).

15. M. Grau, A. E. Leanhardt, **H. Loh**, L. C. Sinclair, R. P. Stutz, T. S. Yahn and E. A. Cornell, "Near-infrared LIF spectroscopy of HfF", Journal of Molecular Spectroscopy 272, 32 (2012).

16. **H. Loh**, J. Wang, M. Grau, T. S. Yahn, R. W. Field, C. H. Greene and E. A. Cornell, "Laser-induced fluorescence studies of HfF^+ produced by autoionization", Journal of Chemical Physics 135, 154308 (2011).
    Editors' choice for year 2011

17. A. E. Leanhardt, J. L. Bohn, **H. Loh**, P. Maletinsky, E. R. Meyer, L. C. Sinclair, R. P. Stutz and E. A. Cornell, "High-resolution spectroscopy on trapped molecular ions in rotating electric fields: A new approach for measuring the electron electric dipole moment", Journal of Molecular Spectroscopy 270, 1 (2011).
    Top most cited article published in JMS since 2011

18. J. K. Thompson, J. Simon, **H. Loh** and V. Vuletić, "A high-brightness source of narrowband, identical photon pairs", Science 313, 74 (2006).

19. **H. Loh**, Y.-J. Lin, I. Teper, M. Cetina, J. Simon, J. K. Thompson and V. Vuletić, "Influence of grating parameters on the linewidths of external-cavity diode lasers", Applied Optics 45, 9191 (2006).

20. V. Chabanenko, R. Puzniak, A. Nabialek, S. Vasiliev, V. Rusakov, **L. Huanqian**, R. Szymczak, H. Szymczak, J. Jun, J. Karpinski and V. Finkel, "Flux Jumps and H-T Diagram of Instability for MgB_2", Journal of Low Temperature Physics 130**,** 175 (2003).

SELECTED INVITED TALKS

1.	Landauer-Bennett Prize Award Symposium, American Physical Society March Meeting, "Scaling up atom arrays"	2022
2.	Optica Quantum 2.0 conference, "Scaling up atom arrays"	2022
3.	4th Asia-Pacific Workshop on Trapped Quantum Systems, "Scaling up atom arrays"	2022
4.	Atomtronics (formerly a Benasque conference), "Single-atom control with optical tweezer arrays"	2021
5.	21st Asian Quantum Information Science Conference, "Single-atom control with optical tweezer arrays"	2021
6.	Optical Society of America (OSA) Frontiers in Optics Annual Meeting, "Quantum control of ultracold dipolar molecules: towards quantum simulation of advanced materials"	2019

7. World Economic Forum "Summer Davos" Meeting, Annual Meeting of the New Champions, "The future of computing" 2019
8. Hot Topics, Annual Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP), "Long-lived nuclear spin coherence in ultracold NaK molecules". 2016
9. Gordon Research Seminar on Quantum Science, "Long-lived nuclear spin coherence in ultracold fermionic NaK molecules". 2016
10. DCMP/GQI Prize Session, American Physical Society March Meeting, "Atoms in a cavity: a source of narrowband photon pairs". 2007