

# AMOS CHAN

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CONTACT	Physics Department, Lancaster University, Lancaster LA1 4YB, United Kingdom	<code>amos.chan@lancaster.ac.uk</code>
CITIZENSHIPS	United Kingdom	
RESEARCH AREAS	Theoretical condensed matter physics, concerning out-of-equilibrium dynamics in strongly correlated many-body quantum systems, specifically in many-body quantum chaotic systems, open many-body quantum systems, many-body localization, and constrained systems.	
EMPLOYMENT	Physics Department, Lancaster University	
	◦ Lecturer (PI equivalent to Assistant Professor)	2022 –
	Princeton Center for Theoretical Science, Princeton University	
	◦ PCTS Postdoctoral Fellow & Croucher Fellow (honorary)	2019 – 2022
EDUCATION	University of Oxford, UK	
	◦ D.Phil. Theoretical Physics	2019
	◦ M.St. Philosophy of Physics	2015
	University of Cambridge, UK	
	◦ M.A.St. Mathematics (Part III of Mathematical Tripos)	2013
	University College London, UK	
	◦ B.Sc. Mathematics and Physics	2012
HONORS AND AWARDS	1. Princeton Center for Theoretical Science, Princeton University PCTS Postdoctoral Fellowship	2019
	2. Croucher Foundation Croucher Fellowship (honorary)	2019
	3. University of Oxford EPSRC & COSF (DPhil Funding)	2015
	4. University of Oxford, University College Brian Keelan Scholarship	2014
	5. University of Cambridge, Peterhouse Scholar in Mathematics & College Prize in Mathematics	2013
	6. University of Cambridge Cambridge Home and European Scholarship Scheme	2012
ACADEMIC SERVICES	Referee services: Annal of Physics; Journal of Physics A: Mathematical and Theoretical; Nature Physics; Physical Review B; Physical Review Letters; Physical Review X; SciPost; Quantum; Quantum Science and Technology.	

- TEACHING
- Quantum information (Lecturer, master-level) 2022–
  - Particle theory (Teaching assistant, master-level) 2017
  - Condensed matter theory (Teaching assistant, master-level) 2016
  - Official summer student: Stephen Yan (Princeton → UCSB) 19/20 & 20/21
  - Close student collaborators: Saumya Shivam (Princeton), Jiachen Li (Princeton), Joey Li (Oxford → UIUC) 2019 –
- PROGRAMMING
- Python, Mathematica, L<sup>A</sup>T<sub>E</sub>X
- REFERENCES
- Prof. David A. Huse, Princeton University      huse@princeton.edu
- Prof. John Chalker, University of Oxford      john.chalker@physics.ox.ac.uk
- Prof. Tomaž Prosen, University of Ljubljana      tomaz.prosen@fmf.uni-lj.si
- Prof. Steven Simon, University of Oxford      steven.simon@physics.ox.ac.uk
- Prof. Austen Lamacraft, University of Cambridge      al200@cam.ac.uk
- Prof. Rahul Nandkishore, University of Colorado Boulder      rahul.nandkishore@colorado.edu
- Dr. Andrea De Luca, CNRS, Université de Cergy-Pontoise      andrea.deluca@physics.ox.ac.uk
- PUBLICATIONS
15. S. Shivam, A. De Luca, D. A. Huse, A. Chan, *Many-body quantum chaos and emergence of Ginibre ensemble*, arXiv:2207.12390, July 2022.
  14. Z. Yan, Z. Y. Meng, D. A. Huse, A. Chan, *Height-conserving quantum dimer models*, arXiv:2204.01740, April 2022.
  13. J. Li, T. Prosen, A. Chan, *Spectral statistics of non-Hermitian matrices and dissipative quantum chaos*, *Physical Review Letter*, **127**, 170602, October 2021.
  12. A. Chan, S. Shivam, D. A. Huse, A. De Luca, *Many-body Quantum Chaos and Space-time Translational Invariance*, accepted in *Nature Communication*, September 2021.
  11. J. Li, A. Chan, T. B. Wahl, *Fermionic Quantum Circuits Reproduce Experimental Two-dimensional Many-body Localization Transition Point*, arXiv:2108.08268, August 2021.
  10. A. Chan, A. De Luca, J. T. Chalker, *Spectral Lyapunov exponents in chaotic and localized many-body quantum systems*, *Physical Review Research*, **3**, 023118, May 2021.
  9. S. Moudgalya, A. Prem, D. A. Huse, A. Chan, *Spectral statistics in constrained many-body quantum chaotic systems*, *Physical Review Research* **3** (2), 023176, September 2020.
  8. Z. Li, A. Chan, T. Wahl, *Classification of symmetry-protected topological phases in two-dimensional many body-localized systems*, *Physical Review B* **102**, 014205, July 2020.

7. A. Chan, T. Wahl, *Classification of symmetry-protected topological many-body localized phases in one dimension*, *Journal of Physics: Condensed Matter* **32** (30), 305601, April 2020.
6. A. J. Friedman, A. Chan, A. De Luca, J. T. Chalker, *Spectral statistics and many-body quantum chaos with conserved charge*, *Physical Review Letter* **123**, 210603, Nov 2019.
5. A. Chan, A. De Luca, J. T. Chalker, *Eigenstate correlations, thermalization and the butterfly effect*, *Physical Review Letter* **122**, 220601, June 2019.
4. A. Chan, R. Nandkishore, M. Pretko, G. Smith, *Unitary-projective entanglement dynamics*, *Physical Review B* **99**, 224307, June 2019.
3. A. Chan, A. De Luca, J. T. Chalker, *Spectral statistics in spatially extended chaotic quantum many-body systems*, *Physical Review Letter* **121** (6), 060601, March 2018.
2. A. Chan, A. De Luca, J. T. Chalker, *Solution of a minimal model for many-body quantum chaos*, *Physical Review X*, **8** (4), 041019, December 2017.
1. B. Li, K. Y. M. Wong, A. Chan, T. Y. So, H. Heimonen, J. Wei, D. Saad, *How market structure drives commodity prices*, *Journal of Statistical Mechanics: Theory and Experiment* 2017 (11), 113405

#### SEMINARS

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|--|---------|
| 26. Cardiff University                             | 11/2022 |
| 25. Lancaster University                           | 10/2022 |
| 24. University of Hong Kong                        | 8/2022  |
| 23. Hong Kong University of Science and Technology | 8/2022  |
| 22. City University of Hong Kong                   | 8/2022  |
| 21. Chinese University of Hong Kong                | 8/2022  |
| 20. MIT  | 5/2022  |
| 19. Harvard University                             | 5/2022  |
| 18. Caltech  | 11/2021 |
| 17. Lancaster University                           | 10/2021 |
| 16. Perimeter Institute                            | 10/2021 |
| 15. Shanghai Jiao Tong University                  | 6/2021  |
| 14. UCLA   | 4/2021  |
| 13. APS March Meeting                              | 3/2021  |
| 12. PCTS   | 3/2021  |
| 11. University of Maryland                         | 2/2021  |
| 10. Princeton University                           | 4/2020  |
| 9. PCTS  | 10/2019 |
| 8. King's College London                           | 2/2019  |

7.	Yale University	12/2018
6.	Harvard University	11/2018
5.	Princeton University	11/2018
4.	Stanford University	11/2018
3.	University of California, Berkeley	11/2018
2.	University of Colorado Boulder	7/2018
1.	University of Oxford	6/2018