

List of Publications

1. Federica Maria Surace, Pierre Fromholz, Nelson Darkwah Oppong, Marcello Dalmonte, Monika Aidelsburger, *Ab initio derivation of lattice gauge theory dynamics for cold gases in optical lattices*, **arXiv:2301.03474** (2023).
2. Alexander Impertro, Julian F. Wienand, Sophie Häfele, Hendrik von Raven, Scott Hu-
bele, Till Klostermann, Cesar R. Cabrera, Immanuel Bloch, Monika Aidelsburger, *An
unsupervised deep learning algorithm for single-site reconstruction in quantum gas microscopes*,
arXiv:2212.11974 (2022).
3. Bo-Ye Sun, Nathan Goldman, Monika Aidelsburger, Marin Bukov,
*Engineering and probing non-Abelian chiral spin liquids using periodically driven ultracold
atoms*, **arXiv:2211.09777** (2022).
4. Roberta Citro, Monika Aidelsburger,
Thouless pumping and topology, **Nature Reviews Physics** (2023).
5. Julian F. Wienand, Friederike Horn, Monika Aidelsburger, Julian Bibo, Fabian Grusdt,
*Thouless Pumps and Bulk-Boundary Correspondence in Higher-Order Symmetry-Protected To-
pological Phases*, **Phys. Rev. Lett.** **128**, 246602 (2022).
6. Till Klostermann, Cesar R Cabrera, Hendrik von Raven, Julian F Wienand, Christian
Schweizer, Immanuel Bloch, Monika Aidelsburger, *Fast long-distance transport of cold ce-
sium atoms*, **Phys. Rev. A** **105**, 043319 (2022).
7. Jad C. Halimeh, Lukas Homeier, Christian Schweizer, Monika Aidelsburger, Philipp
Hauke, Fabian Grusdt, *Stabilizing Lattice Gauge Theories Through Simplified Local Pseudo
Generators*, **Phys. Rev. Research** **4**, 033120 (2022).
8. Thomas Kohlert, Sebastian Scherg, Pablo Sala, Frank Pollmann, Bharath Hebbe Madhu-
sudhana, Immanuel Bloch, Monika Aidelsburger, *Exploring the Regime of Fragmentation
in Strongly Tilted Fermi-Hubbard Chains*, **Phys. Rev. Lett.** **130**, 010201 (2023).
9. Monika Aidelsburger und Christof Weitenberg, *Topologische Materie – ultrakalt*, *Physik
Journal* **20**, 46-51 (2021).
10. Monika Aidelsburger, Luca Barbiero, Alejandro Bermudez, Titas Chanda, Alexandre
Dauphin, Daniel González-Cuadra, Przemysław R. Grzybowski, Simon Hands, Fred Jen-
drzejewski, Johannes Jünemann, Gediminas Juzeliunas, Valentin Kasper, Angelo Piga,
Shi-Ju Ran, Matteo Rizzi, Gérman Sierra, Luca Tagliacozzo, Emanuele Tirrito, Torsten V.
Zache, Jakub Zakrzewski, Erez Zohar, Maciej Lewenstein, *Cold atoms meet lattice gauge
theory*, **Phil. Trans. R. Soc. A** **380**, 20210064 (2021).
11. Bharath H. M., Sebastian Scherg, Thomas Kohlert, Immanuel Bloch, Monika Aidelsburger,
*Benchmarking a novel efficient numerical method for localized 1D Fermi-Hubbard systems on a
quantum simulator*, **PRX Quantum** **2**, 040325 (2021).

12. Lukas Homeier, Christian Schweizer, Monika Aidelsburger, Arkady Fedorov, Fabian Grusdt, *\mathbb{Z}_2 lattice gauge theories and Kitaev's toric code: A scheme for analog quantum simulation*, **Phys. Rev. B** **104**, 085138 (2021)
13. Felix A. Palm, Maximilian Buser, Julian Léonard, Monika Aidelsburger, Ulrich Schollwöck, Fabian Grusdt, *Bosonic Pfaffian State in the Hofstadter-Bose-Hubbard Model*, **Phys. Rev. B** **103**, 161101 (2021).
14. Sebastian Scherg, Thomas Kohlert, Pablo Sala, Frank Pollmann, Bharath Hebbe Madhusudhana, Immanuel Bloch, M. Aidelsburger, *Observing non-ergodicity due to kinetic constraints in tilted Fermi-Hubbard chains*, **Nature Comm.** **21**, 4490 (2021).
15. D. González-Cuadra, A. Dauphin, M. Aidelsburger, M. Lewenstein, A. Bermudez, *The rotor Jackiw-Rebbi model: a cold-atom approach to chiral symmetry restoration and quark confinement*, **PRX Quantum** **1**, 020321 (2020)
16. K. Wintersperger, C. Braun, F. N. Ünal, A. Eckardt, M. Di Liberto, N. Goldman, I. Bloch, M. Aidelsburger, *Realization of anomalous Floquet topological systems with ultracold atoms*, **Nature Physics** **16**, 1058-1063 (2020).
17. K. Wintersperger, M. Bukov, J. Näger, S. Lellouch, E. Demler, U. Schneider, I. Bloch, N. Goldman, M. Aidelsburger, *Parametric instabilities of interacting bosons in periodically-driven 1D optical lattices*, **Phys. Rev. X** **10**, 011030 (2020).
18. Peng Cheng, Philipp W. Klein, Kirill Plekhanov, Klaus Sengstock, Monika Aidelsburger, Christof Weitenberg, Karyn Le Hur, *Topological proximity effects in a Haldane-graphene bilayer system*, **Phys. Rev. B** **100**, 081107 (2019).
19. Christian Schweizer, Fabian Grusdt, Moritz Berngruber, Luca Barbiero, Eugene Demler, Nathan Goldman, Immanuel Bloch, Monika Aidelsburger, *Floquet approach to \mathbb{Z}_2 lattice gauge theories with ultracold atoms in optical lattices*, **Nature Physics** **15**, 1168-1173 (2019).
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21. L. Barbiero, C. Schweizer, M. Aidelsburger, E. Demler, N. Goldman, F. Grusdt, *Coupling ultracold matter to dynamical gauge fields in optical lattices: From flux-attachment to \mathbb{Z}_2 lattice gauge theories*, **Science Advances** **5**, eaav7444 (2019).
22. T. Kohlert, S. Scherg, X. Li, H. P. Lüschen, S. Das Sarma, I. Bloch, M. Aidelsburger, *Observation of many-body localization in a one-dimensional system with single-particle mobility edge*, **Phys. Rev. Lett.** **122**, 170403 (2019).
23. S. Scherg, T. Kohlert, J. Herbrych, J. Stolpp, P. Bordia, U. Schneider, F. Heidrich-Meisner, I. Bloch, M. Aidelsburger, *Non-Equilibrium Mass Transport in the 1D Fermi-Hubbard Model*, **Phys. Rev. Lett.** **121**, 130402 (2018).
24. M. Aidelsburger, *Artificial gauge fields and topology with ultracold atoms in optical lattices*, invited tutorial for **J. Phys. B: At. Mol. Opt. Phys.** **51**, 193001 (2018).

25. J. L. Ville, R. Saint-Jalm, É. Le Cerf, M. Aidelsburger, S. Nascimbène, J. Dalibard, J. Beugnon, *Sound propagation in a uniform superfluid two-dimensional Bose gas*, **Phys. Rev. Lett.** **121**, 145301 (2018).
 26. R. Saint-Jalm, M. Aidelsburger, J. L. Ville, L. Corman, Z. Hadzibabic, D. Delande, S. Nascimbène, N. Cherroret, J. Dalibard, J. Beugnon, *Resonant-light diffusion in a disordered atomic layer*, **Phys. Rev. A** **97**, 061801(R) (2018).
 27. M. Aidelsburger, S. Nascimbène, N. Goldman, *Artificial gauge fields in materials and engineered systems*, **C. R. Physique** **19**, 394-432 (2018), invited paper special issue on “Quantum Simulations” for Comptes Rendus de l’Académie des Sciences.
 28. L. Corman, J. L. Ville, R. Saint-Jalm, M. Aidelsburger, T. Bienaimé, S. Nascimbène, J. Dalibard, J. Beugnon, *Transmission of near-resonant light through a dense slab of cold atoms*, **Phys. Rev. A** **96**, 053629 (2017).
 29. M. Aidelsburger, J. L. Ville, T. Bienaimé, R. Saint-Jalm, S. Nascimbène, J. Dalibard, J. Beugnon, *Relaxation dynamics in the merging of N independent condensates*, **Phys. Rev. Lett.** **119**, 190403 (2017).
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 31. M. Aidelsburger, *Cold atoms twisting spin and momentum*, **Science** **354**, 35-36 (2016).
 32. M. Lohse, C. Schweizer, O. Zilberberg, M. Aidelsburger, I. Bloch, *A Thouless Quantum Pump with Ultracold Bosonic Atoms in an Optical Superlattice*, **Nature Physics** **12**, 350-354 (2016).
 33. L. Mazza, M. Aidelsburger, H.-H. Tu, N. Goldman, M. Burrello, *Methods for detecting charge fractionalization and winding numbers in an interacting fermionic ladder*, **New J. Phys.** **17**, 105001 (2015).
 34. M. Aidelsburger, *Quanten-Hall-Physik mit ultrakalten Atomen*, Invited paper for **Physik in unserer Zeit** **46**, 111-112 (2015).
 35. N. Goldman, J. Dalibard, M. Aidelsburger, N. R. Cooper, *Periodically-driven quantum matter: the case of resonant modulations*, **Phys. Rev. A** **91**, 033632 (2015).
 36. M. Aidelsburger, M. Lohse, C. Schweizer, M. Atala, J. T. Barreiro, S. Nascimbène, N. R. Cooper, I. Bloch, N. Goldman, *Measuring the Chern number of Hofstadter bands with ultracold atoms*, **Nature Physics** **11**, 162-166 (2015)[†].
- [†]see also: *Commentary* by Wolfgang Ketterle
Inside the quantum Hall effect, **Nature Physics** **11**, 90-91 (2015).
37. M. Atala, M. Aidelsburger, M. Lohse, J. T. Barreiro, B. Paredes, I. Bloch, *Observation of chiral currents with ultracold atoms in bosonic ladders*, **Nature Physics** **10**, 588-593 (2014).

38. M. Aidelsburger, M. Atala, M. Lohse, J. T. Barreiro, B. Paredes, I. Bloch, *Realization of the Hofstadter Hamiltonian with ultracold atoms in optical lattices*, **Phys. Rev. Lett.** **111**, 185301 (2013).
39. M. Atala*, M. Aidelsburger*, J. T. Barreiro, D. Abanin, T. Kitagawa, E. Demler, I. Bloch, *Direct measurement of the Zak phase in topological Bloch bands*, **Nature Physics** **9**, 795-800 (2013).
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40. M. Aidelsburger, M. Atala, S. Nascimbène, S. Trotzky, Y.-A. Chen, I. Bloch, *Experimental realization of strong effective magnetic fields in optical superlattice potentials*, Invited paper **Appl. Phys. B** **113**, 1 (2013).
41. S. Nascimbène, Y.-A. Chen, M. Atala, M. Aidelsburger, S. Trotzky, B. Paredes, I. Bloch, *Experimental realization of plaquette resonating valence-bond states with ultracold atoms in optical superlattices*, **Phys. Rev. Lett.** **108**, 205301 (2012).
42. M. Aidelsburger, M. Atala, S. Nascimbène, S. Trotzky, Y.-A. Chen, I. Bloch, *Experimental realization of strong effective magnetic fields in an optical lattice*, **Phys. Rev. Lett.** **107**, 255301 (2011).
43. Y.-A. Chen, S. Nascimbène, M. Aidelsburger, M. Atala, S. Trotzky, I. Bloch, *Controlling Correlated Tunneling and Superexchange Interactions with ac-Driven Optical Lattices*, **Phys. Rev. Lett.** **107**, 210405 (2011).
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Book

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