

CURRICULUM VITAE

Dr. Neil J. Robinson

Marie Skłodowska-Curie Fellow, Institute for Theoretical Physics, University of Amsterdam

RESEARCH KEYWORDS

- Strongly correlated systems (electronic/magnetic chains and ladders, cold atomic gases)
- Quantum field theories with confinement
- High-temperature cuprate superconductors, iridate heterostructures, manganate thin films
- Integrable systems (lattice and continuum) and conformal field theory
- Truncated spectrum methods, numerical approaches to quantum field theories
- Weak integrability breaking and nonperturbative methodologies

RESEARCH CAREER

Marie Skłodowska-Curie Individual Fellow 10/17–09/19
Institute for Theoretical Physics, University of Amsterdam, Netherlands
Host: Prof. Jean-Sébastien Caux
Publications: 2× Phys. Rev. Lett., 2× Phys. Rev. B, 1× Sci. Rep., 1× Rep. Prog. Phys.,
1× Physics Viewpoint

Research Associate 10/14–09/17
Condensed Matter Physics & Material Science Division, Brookhaven National Lab, USA
Supervisor: Dr. Robert Konik
Publications: 2× Phys. Rev. Lett., 1× Phys. Rev. B Rapid Commun., 1× Phys. Rev. B,
1× J. Stat. Mech., 1× Rep. Prog. Phys.

RESEARCH FUNDING

Horizon 2020 Marie Skłodowska-Curie Individual Fellowship 10/17–09/19
Principal Investigator (165,000€)

EDUCATION

DPhil Theoretical Physics 10/10–09/14
University of Oxford, UK (Supervisor: Prof. Fabian Essler)
Publications: 3× Phys. Rev. B

MPhys Physics (First Class, Honours) 10/06–08/10
University of Exeter, UK (Thesis Supervisor: Prof. Misha Portnoi)
Publications: 1× Phys. Rev. B

SUPERVISION

PhD copromoter, Bart de Klerk (University of Amsterdam) 10/18–09/22
MSc supervisor, Xanthe Verbeek (→ PhD, ETH Zürich) 10/18–08/19
High school student research supervisor, Brian Isakov (→ BEng, Cornell) 06/17–08/17

TEACHING

Course coordinator, *Student Seminar in Theoretical Physics* 03/19–06/19
6EC MSc Course covering a range of topics in theoretical physics.
12 hrs of lectures on non-perturbative methods in quantum field theory.

Coordinator, *Condensed Matter Theory Journal Club* 10/18–present
Covering classic and contemporary topics in condensed matter theory.
Circa 20 attendees, including students, postdocs, and faculty.

CURRICULUM VITAE

- Course assistant**, *Student Seminar in Theoretical Physics* 01/18–05/18
6EC MSc Course. Main coordinator: Prof. Jean-Sébastien Caux.
Lectured 6 hrs intro to conformal field theory. Coordinator of project section of the course.
- Graduate teaching assistant**, *C6 Theoretical Physics* 09/11–05/13
Problem class tutor for the final year theory option, University of Oxford

RECENT INVITED TALKS

1. Symposium for Prof. T. M. Rice’s 80th Birthday, ETH Zurich 06/19
45 min: *Ladder-like physics in transport phenomena of high- T_c cuprates*
2. Quantum Snapshots 2019, City University of New York 03/19
30 min: *Nonthermal states in nonintegrable models with confinement*
3. Condensed Matter Theory Seminar, University of Utrecht 01/19
60 min: *Ladder-like physics in transport phenomena of high- T_c cuprates*
4. Institute of Physics Monthly “Pizza Seminars”, University of Amsterdam 11/18
15 min: *Non-thermal states in non-integrable models*
5. Theory of Condensed Matter Seminar, University of Nottingham 11/18
60 min: *Non-thermal states in non-integrable models with confinement*
6. Quantum Paths Workshop, Erwin Schrödinger Institute, University of Vienna 05/18
30 min: *Non-thermal states in theories with confinement*
7. MSc Students’ Seminar, University of Amsterdam 03/18
60 min: *Truncated spectrum methods: A whistle-stop tour*
8. Hamiltonian Methods in Strongly Coupled QFT, IHES Université Paris-Saclay 01/18
60 min: *Non-thermal states in the non-integrable Ising field theory*
9. Triangle Meeting of the Delta Institute for Theoretical Physics 11/17
60 min: *Non-thermal states in the non-integrable Ising field theory*

RECENT OUTREACH ACTIVITIES

- Panel discussion “Life as a postdoc”, UvA MSc Student Seminar 2019
Supervisor in the high school summer research program, BNL 2017
“Life as a physicist” talk to high school students, BNL 2017
Assistant, MoMath Intro to Scientific Computing Course 2017
Scientist at “Meet a scientist” high school careers event, BNL 2016–17
Moderator, Long Island Middle School Science Bowl 2016
Judge, NY State High School & Long Island Elementary Science Fairs 2015

PROFESSIONAL ACTIVITIES

- Referee** APS Journals (Phys. Rev. Lett, Phys. Rev. X, Phys. Rev. B, Phys. Rev. A)
Referee IOP Journals (New J. Phys, J. Stat. Mech, J. Phys. A)
Referee Nature Journals (Nature Phys.)
Referee Other Journals (SciPost Phys.)
- PhD Examination Committee**, Ana Silva, University of Amsterdam 2019
Invited expert “Viewpoint in Physics” for APS Physics 2018
Theory Representative, Seminar Committee, BNL CMPMS Division 2016–17
Executive Board Member, Brookhaven Women in Science; 501(c)3 charity 2016–17
Chair of Chasman Scholarship Committee, Brookhaven Women in Science 2016–17
Organizing Committee, BNL Early Career Researchers Symposium 2015–17
Presentations Committee Chair, BNL Young Researchers Symposium 2015
Board Member & Advisor, BNL Association of Students & Postdocs 2015–17
Signee of LGBT+ Physicists Outlist, promoting visibility of LGBT+ physicists 2015 on

PUBLICATION LIST

Overview. Four letters appearing in Physical Review Letters and one rapid communication in Physical Review B. Two major review articles in Reports on Progress in Physics. One invited Viewpoint in Physics. Other articles appearing in journals such as Physical Review B, Scientific Reports, and Journal of Statistical Mechanics.

Citation summary. Total number of citations is 471 (404) with h-index 9 (8). Citation counts for each paper are listed from Google Scholar (bracketed figures from NASA ADS).

Authorship conventions. Generally the lead author is listed first and the supervising author last. If all authors made roughly equal contributions it is not unusual to shift to alphabetical ordering of authors (denoted * below).

1. A. Cortés Cubero and N. J. Robinson, “*Lack of thermalization in (1+1)-d QCD at large N_c* ”, to appear on arXiv in July 2019, to be submitted to J. High Energy Phys.
2. N. J. Robinson, P. D. Johnson, T. M. Rice, and A. M. Tsvelik, “*Anomalies in the pseudogap phase of the cuprates: A perspective on the role of umklapp scattering*”, [arXiv:1906.09005 \(2019\)](#). To appear in *Rep. Prog. Phys.* (2019). 0 (1) citations
3. N. J. Robinson, A. J. A. James, and R. M. Konik, “*Signatures of rare states and thermalization in a theory with confinement*”, *Phys. Rev. B* **99**, 195108 (2019). 6 (7) citations
4. *A. J. A. James, R. M. Konik, and N. J. Robinson, “*Nonthermal states arising from confinement in one and two dimensions*”, *Phys. Rev. Lett.* **122**, 130603 (2019). 15 (17) citations
5. D. Meyers, Y. Cao, G. Fabbris, N. J. Robinson, L. Hao, C. Frederick, N. Traynor, J. Yang, J. Lin, M. H. Upton, D. Casa, J.-W. Kim, T. Gog, E. Karapetrova, Y. Choi, D. Haskel, P. J. Ryan, L. Horak, X. Liu, J. Liu, and M. P. M. Dean, “*Magnetism in artificial Ruddlesden-Popper iridates leveraged by structural distortions*”, *Sci. Rep.* **9**, 4263 (2019). 6 (7) citations
6. L. Classen, N. J. Robinson, and A. M. Tsvelik, “*Ladder-like optical conductivity in the spin-fermion model*”, *Phys. Rev. B* **99**, 115110 (2019). 1 (0) citations
7. N. J. Robinson, A. Altland, R. Egger, N. M. Gergs, W. Li, D. Schuricht, A. M. Tsvelik, A. Weichselbaum, and R. M. Konik, “*Non-Topological Majorana Zero Modes in Inhomogeneous Spin Ladders*”, *Phys. Rev. Lett.* **122**, 027201 (2019). 5 (6) citations
8. N. J. Robinson, “*Viewpoint: Cold Atoms bear a Quantum Scar*”, *Physics* **11**, 105 (2018). 1 (1) citations
9. *A. J. A. James, R. M. Konik, P. Lecheminant, N. J. Robinson, and A. M. Tsvelik, “*Non-perturbative methodologies for low-dimensional strongly-correlated systems: From non-Abelian bosonization to truncated spectrum methods*”, *Rep. Prog. Phys.* **81**, 046002 (2018). 21 (24) citations
10. *T. M. Rice, N. J. Robinson, and A. M. Tsvelik, “*Umklapp scattering as the origin of T-linear resistivity in the normal state of high- T_c cuprate superconductors*”, *Phys. Rev. B Rapid Commun.* **96**, 220502 (2017). 7 (6) citations
11. N. J. Robinson and R. M. Konik, “*Excitations in the Yang-Gaudin Bose gas*”, *J. Stat. Mech.* **2017** 063101 (2017). 0 (1) citations

PUBLICATION LIST

12. *B. Bertini, F. H. L. Essler, S. Groha, and N. J. Robinson, “*Thermalization and light-cones in a model with weak integrability breaking*”, [Phys. Rev. B **94**, 245117 \(2016\)](#). 36 (28) citations
13. N. J. Robinson, J.-S. Caux and R. M. Konik, “*Motion of a distinguishable impurity in the Bose gas: arrested expansion without a lattice and impurity snaking*”, [Phys. Rev. Lett. **116**, 145302 \(2016\)](#). 24 (21) citations
14. N. J. Robinson, J.-S. Caux, and R. M. Konik, “*Exact nonequilibrium dynamics of a class of initial states in one-dimensional two-component integrable quantum gases*”, [arXiv:1602.05532 \(2016\)](#). 4 (7) citations.
15. *B. Bertini, F. H. L. Essler, S. Groha, and N. J. Robinson, “*Prethermalization and thermalization in models with weak integrability breaking*”, [Phys. Rev. Lett. **115**, 180601 \(2015\)](#). 98 (85) citations
16. N. J. Robinson, F. H. L. Essler, I. Cabrera, and R. Coldea, “*Quasiparticle breakdown in the quasi-one-dimensional Ising ferromagnet CoNb_2O_6* ”, [Phys. Rev. B **90**, 174406 \(2014\)](#). 12 (8) citations
17. *F. H. L. Essler, S. Kehrein, S. R. Manmana, and N. J. Robinson, “*Quench dynamics in a model with tuneable integrability breaking*”, [Phys. Rev. B **89**, 165104 \(2014\)](#). 120 (108) citations
18. N. J. Robinson, F. H. L. Essler, E. Jeckelmann, and A. M. Tsvelik, “*Finite wave vector pairing in doped two-leg ladders*”, [Phys. Rev. B **85**, 195103 \(2012\)](#). 19 (12) citations
19. R. R. Hartmann, N. J. Robinson, and M. E. Portnoi, “*Smooth electron waveguides in graphene*”, [Phys. Rev. B **81**, 245431 \(2010\)](#). 96 (65) citations

Manuscripts in preparation for submission

20. N. J. Robinson, A. J. J. M. de Klerk, and J.-S. Caux, “*Finite interaction quenches in the Lieb-Liniger model*”, to be submitted to SciPost Phys. (2019).
21. X. H. Verbeek, J.-S. Caux, and N. J. Robinson, “*Dynamical correlation functions in the perturbed Ising field theory*”, to be submitted to SciPost Phys. (2019).
22. N. J. Robinson, A. J. A. James, G. P. Brandino, and R. M. Konik, “*Nonthermal meson and baryon excitations in the three state Potts model*”, to be submitted to Phys. Rev. B (2019).
23. N. J. Robinson, A. Altland, R. Egger, N. M. Gergs, W. Li, D. Schuricht, A. M. Tsvelik, A. Weichselbaum, and R. M. Konik, “*Conjuring Majoranas from avoided topological phases of spin ladders*”, to be submitted to Phys. Rev. B (2019).
24. N. J. Robinson, D. Meyers, and M. P. M. Dean, “*Magnons in single- and bilayer Ruddlesden-Popper iridates*”, to be submitted to Phys. Rev. B (2019).