

## Neil J. Robinson

Marie Skłodowska-Curie Individual Fellow, Institute for Theoretical Physics, Universiteit van Amsterdam

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**Citizenship:** British

## Work Experience

PERIOD	<b>October 2017 — September 2019</b>	
EMPLOYER	<b>Universiteit van Amsterdam</b>	Amsterdam, The Netherlands
JOB TITLE	<b>Marie Skłodowska-Curie Fellow</b>	
PERIOD	<b>September 2014 — September 2017</b>	
EMPLOYER	<b>Brookhaven National Laboratory</b>	Upton, New York, USA
JOB TITLE	<b>Postdoctoral Research Associate</b>	

## Education

PERIOD	<b>October 2010 — August 2014</b>	
DEGREE	<b>DPhil in Theoretical Physics</b>	
ADVISOR	<b>Prof. Fabian Essler</b>	
UNIVERSITY	<b>University of Oxford</b>	Oxford, UK
PERIOD	<b>October 2006 — August 2010</b>	
DEGREE	<b>MPhys Master of Physics</b>	
RANK	<b>First Class (with honours)</b>	
UNIVERSITY	<b>University of Exeter</b>	Exeter, UK

## Awards, Honours and Funding

2017–2019	Marie Skłodowska-Curie Fellowship (165,000€)
2017	Brookhaven National Laboratory Spotlight Award for Exceptional Performance
2016	Brookhaven National Laboratory Spotlight Award for Exceptional Performance
2010	National Physical Laboratory SET Award, Best UK Physics Student
	Bertie Black Prize, University of Exeter
	Newman Prize, University of Exeter
2007–2010	Commendation from the Dean, University of Exeter
	School of Physics Prize, University of Exeter
	Millhayes Academic Scholarship, University of Exeter
	William Williams Trust, Educational Grant

## Supervision

TITLE	<b>MSc Thesis Advisor</b>
STUDENTS	One student
TIME	2018/19 (1 year)
TITLE	<b>High School Summer Research Student Mentor</b>
STUDENTS	One student
TIME	Summer 2017

## Teaching

TITLE	<b>Student Seminar: Theoretical Physics</b>
POSITION	<b>Course co-ordinator</b>
TIME	2019, 15 × 4hr sessions
SIZE	t.b.c.
TOPICS	t.b.d.
TITLE	<b>Student Seminar: Theoretical Physics</b>
POSITION	<b>Assistant, Project Supervisor, and 6 hrs of lectures</b>
TIME	2018, 15 × 4hr sessions
SIZE	c. 30 students
TOPICS	Three Facets of 1D Quantum Physics: Integrability/Bethe Ansatz, Bosonization and Refermionization, Conformal Field Theory
TITLE	<b>C6 Theoretical Physics</b>
POSITION	<b>Problems Class Tutor</b>
TIME	2011–13, 6 Terms
SIZE	10–15 students
TOPICS	Many body quantum mechanics, classical and quantum field theory, statistical mechanics, stochastic processes, phase transitions and critical phenomena

## Recent Professional Activities

REFEREE	APS Journals: Phys. Rev. X, Phys. Rev. Lett., Phys. Rev. B IOP Journals: New J. Phys., J. Stat. Mech., J. Phys. A
2018–19	Examiner, PhD Thesis Committee of Ana Silva (UvA)
2018–19	MSc Advisor, Xanthe Verbeek (UvA)
2017–18	Gezelligheid committee member, Jong UvA
2016–17	Executive Board Member, Brookhaven Women in Science (BWIS)
2016–17	Renate W. Chasman Scholarship Committee Chair, BWIS
2016–17	CMPMS Division Seminar Committee Theory Representative
2016–17	Advisor to the Brookhaven National Lab Association of Students and Postdocs
2015–17	Organizing Committee, Early Career Researchers Symposium, Brookhaven National Lab
2016	Organizer, APS–Brookhaven National Lab Author and Referee Tutorial
2015	Presentations Chair, Young Researchers Symposium, Brookhaven National Lab
2015	Board Member, Brookhaven National Lab Association of Students and Postdocs

## Recent Outreach

- 2017 Life as a physicist talk to high school students, Brookhaven National Laboratory  
Scientist at ‘Meet a Scientist’ high school careers event  
Moderator, Long Island Regional High School Science Bowl  
Assistant, MoMath Introduction to Scientific Computing
- 2016 Scientist at ‘Meet a Scientist’ high school careers event  
Moderator, Long Island Regional Middle School Science Bowl
- 2015 Judge, NY State Science Congress High School Science Fair  
Judge, Long Island Regional Elementary School Science Fair  
Moderator, Long Island Regional High School Science Bowl

## Recent International Collaborators

THEORY Prof. Alexander Altland, University of Cologne (Germany)  
 Dr. Bruno Bertini, University of Ljubljana (Slovenia)  
 Prof. Jean-Sébastien Caux, University of Amsterdam (the Netherlands)  
 Prof. Reinhold Egger, Heinrich-Heine-Universität Düsseldorf (Germany)  
 Prof. Fabian Essler, University of Oxford (UK)  
 Dr. Andrew James, University College London (UK)  
 Prof. Robert Konik, Brookhaven National Laboratory (BNL, USA)  
 Prof. Philippe Lecheminant, LPTM Université de Cergy-Pontoise (France)  
 Dr. Isaac Pérez Castillo, Universidad Nacional Autónoma de México (México)  
 Prof. Maurice Rice, ETH Zurich (Switzerland)  
 Dr. Dirk Schuricht, University of Utrecht (the Netherlands)  
 Prof. Alexei Tsvelik, BNL (USA)  
 Dr. Andreas Weichselbaum, BNL (USA)

EXPERIMENT Dr. Yue Cao, X-ray Scattering, Argonne National Laboratory (USA)  
 Dr. Radu Coldea, Neutron Scattering, University of Oxford (UK)  
 Dr. Mark Dean, X-ray Scattering, BNL (USA)  
 Dr. Derek Meyers, Pulsed Laser Deposition & X-ray Scattering, BNL (USA)  
 Dr. Jing Tao, Electron Microscopy, BNL (USA)

## Publications

(\* denotes alphabetical ordering of authors)

### Letters

- |      |         |   |
|------|---------|---|
| (1)* | TITLE   | <i>Prethermalization and thermalization in models with weak integrability breaking</i>  |
|      | AUTHORS | B. Bertini, F. H. L. Essler, S. Groha and <b><u>N. J. Robinson</u></b>  |
|      | JOURNAL | <a href="#">Phys. Rev. Lett. <b>115</b>, 180601 (2015)</a>  |
| (2)  | TITLE   | <i>Motion of a distinguishable impurity in the Bose gas: arrested expansion without a lattice and impurity snaking</i>                            |
|      | AUTHORS | <b><u>N. J. Robinson</u></b> , J.-S. Caux and R. M. Konik   |
|      | JOURNAL | <a href="#">Phys. Rev. Lett. <b>116</b> 145302 (2016)</a>   |
| (3)* | TITLE   | <i>Umklapp scattering as the origin of <math>T</math>-linear resistivity in the normal state of high-<math>T_c</math> cuprate superconductors</i> |
|      | AUTHORS | T. M. Rice, <b><u>N. J. Robinson</u></b> , and A. M. Tsvelik  |
|      | JOURNAL | <a href="#">Phys. Rev. B <b>96</b>, 220502(R) (2017)</a>  |
| (4)  | TITLE   | <i>Magnetism in artificial Ruddlesden-Popper iridates leveraged by structural distortions</i>   |
|      | AUTHORS | D. Meyers, Y. Cao, G. Fabbris, <b><u>N. J. Robinson</u></b> , <i>et al.</i>   |
|      | JOURNAL | <a href="#">arXiv:1707.08910 (2017)</a>   |
| (5)* | TITLE   | <i>Nonthermal states arising from confinement in one and two dimensions</i>   |
|      | AUTHORS | A. J. A. James, R. M. Konik, and <b><u>N. J. Robinson</u></b>   |
|      | JOURNAL | <a href="#">arXiv:1804.09990 (2018)</a> , under review at Phys. Rev. Lett.  |
| (6)  | TITLE   | <i>Non-Topological Majorana Zero Modes in Inhomogeneous Spin Ladders</i>  |
|      | AUTHORS | <b><u>N. J. Robinson</u></b> , A. Altland, R. Egger, N. Gergas, W. Li, D. Schuricht, A. M. Tsvelik, A. Weichselbaum, and R. M. Konik              |
|      | JOURNAL | <a href="#">arXiv:1806.01925 (2018)</a> , under review at Phys. Rev. Lett.  |

Articles

- (1) TITLE *Smooth electron waveguides in graphene*  
 AUTHORS R. R. Hartmann, **N. J. Robinson**, and M. E. Portnoi  
 JOURNAL [Phys. Rev. B \*\*81\*\*, 245431 \(2010\)](#)
- (2) TITLE *Finite wave vector pairing in doped two-leg ladders*  
 AUTHORS **N. J. Robinson**, F. H. L. Essler, E. Jeckelmann and A. M. Tsvelik  
 JOURNAL [Phys. Rev. B \*\*85\*\*, 195103 \(2012\)](#)
- (3)\* TITLE *Quench dynamics in a model with tunable integrability breaking*  
 AUTHORS F. H. L. Essler, S. Kehrein, S. Manmana and **N. J. Robinson**  
 JOURNAL [Phys. Rev. B \*\*89\*\*, 165104 \(2014\)](#)
- (4) TITLE *Quasiparticle breakdown in the quasi-one-dimensional Ising ferromagnet  $\text{CoNb}_2\text{O}_6$*   
 AUTHORS **N. J. Robinson**, F. H. L. Essler, I. Cabrera and R. Coldea  
 JOURNAL [Phys. Rev. B \*\*90\*\*, 174406 \(2014\)](#)
- (5) TITLE *Exact nonequilibrium dynamics of a class of initial states in one-dimensional two-component quantum gases*  
 AUTHORS **N. J. Robinson**, J.-S. Caux and R. M. Konik  
 JOURNAL [arXiv:1602.05532 \(2016\)](#)
- (7)\* TITLE *Thermalization and light-cones in a model with weak integrability breaking*  
 AUTHORS B. Bertini, F. H. L. Essler, S. Groha and **N. J. Robinson**  
 JOURNAL [Phys. Rev. B \*\*94\*\*, 245117 \(2016\)](#)
- (8) TITLE *Excitations in the Yang-Gaudin Bose gas*  
 AUTHORS **N. J. Robinson** and R. M. Konik  
 JOURNAL [J. Stat. Mech. \*\*2017\*\* 063101 \(2017\)](#)
- (9) TITLE *Signatures of rare states and thermalization in a theory with confinement*  
 AUTHORS **N. J. Robinson**, A. J. A. James and R. M. Konik  
 JOURNAL [arXiv:1808.10782 \(2018\)](#), to be submitted to Phys. Rev. B
- (10) TITLE *Optical conductivity in two-leg ladder models and applications to the spin-fermion model*  
 AUTHORS L. Classen, **N. J. Robinson** and A. M. Tsvelik  
 JOURNAL in preparation, to appear in 2018

Review Articles

- (1)\* TITLE *Non-perturbative methodologies for low-dimensional strongly-correlated systems: From non-Abelian bosonization to truncated spectrum methods*  
 AUTHORS A. J. A. James, R. M. Konik, P. Lecheminant, **N. J. Robinson**, and A. M. Tsvelik  
 JOURNAL [Rep. Prog. Phys. \*\*81\*\*, 046002 \(2018\)](#)
- (2) TITLE *Anomalies in the pseudogap phase of the cuprates: A perspective on the role of umklapp scattering*  
 AUTHORS **N. J. Robinson**, P. D. Johnson, A. M. Tsvelik, and T. M. Rice  
 JOURNAL in preparation, to be submitted to Rep. Prog. Phys. in 2018

## Recent Invited Presentations (since 2017)

TITLE	<i>Nonthermal states in theories with confinement</i>
EVENT	Quantum Paths, ESI Vienna
DATE	May 2018
TITLE	<i>Conjuring Majorana fermions in inhomogeneous ladders</i>
EVENT	UvA Condensed Matter Theory Seminar (blackboard talk)
DATE	March 2018
TITLE	<i>Truncated spectrum methods: a whistle-stop tour</i>
EVENT	UvA Master's Student Seminar Series
DATE	March 2018
TITLE	<i>Non-thermal states in the non-integrable Ising field theory</i>
EVENT	Hamiltonian methods in strongly coupled QFT, IHES Université Paris-Saclay
DATE	January 2018
TITLE	<i>An introduction to truncated spectrum methods</i>
EVENT	UCL Strongly Correlated Systems Group Meeting
DATE	November 2017
TITLE	<i>Truncated spectrum methods and non-thermal states in the Ising field theory</i>
EVENT	Triangle Meeting, Delta Institute for Theoretical Physics
DATE	November 2017
TITLE	<i>Non-thermal states in the non-integrable Ising field theory</i>
EVENT	Wonders of Broken Integrability, SCGP
DATE	October 2017
TITLE	<i>Truncated spectrum methods and non-thermal states in the Ising field theory</i>
EVENT	CCQP Seminar, Flatiron Institute, Simons Foundation NYC
DATE	September 2017
TITLE	<i>First steps towards dynamics of multi-component integrable models</i>
EVENT	Condensed Matter Physics Seminar, UCLA
DATE	May 2017
TITLE	<i>Emergent phenomena in condensed matter physics</i>
EVENT	CrossTalk Colloquium, BNL Association of Students and Postdocs
DATE	May 2017
TITLE	<i>A time-dependent mean field description of pump-probe ARPES</i>
EVENT	APS March Meeting 2017
DATE	March 2017
TITLE	<i>First steps towards dynamics of multi-component integrable models</i>
EVENT	Dynamics and hydrodynamics of certain quantum matter, CUNY
DATE	March 2017
TITLE	<i>Prethermalization and thermalization in an integrability-breaking quench</i>
EVENT	Condensed Matter Theory Seminar, Universiteit van Amsterdam
DATE	February 2017
TITLE	<i>Dynamics of a mobile impurity in the Bose gas</i>
EVENT	Condensed Matter Theory Seminar, Universitat Göttingen
DATE	February 2017