

Merlijn van Horssen MMath, PhD

CONTACT INFORMATION	(Further contact details available on request)	e-mail: merlijn at gmail dot com www.mvanhorssen.com
RESEARCH INTERESTS	Quantum dynamical phase transitions, large deviations for quantum stochastic processes, quantum dynamical semigroups, non-equilibrium dynamics of classical and quantum systems.	
ACADEMIC EMPLOYMENT	University of Nottingham , Nottingham, United Kingdom January 2014 – February 2016 Postdoctoral Researcher (EPSRC Doctoral Prize Holder), Condensed Matter Theory Group, School of Physics and Astronomy	
EDUCATION	University of Nottingham , Nottingham, United Kingdom October 2009 – December 2013 <i>PhD</i> , “Large deviations and dynamical phase transitions for quantum Markov processes” <ul style="list-style-type: none">• Supervisor: Dr. Madalin Guta University of Nottingham , Nottingham, United Kingdom October 2005 – June 2009 <i>MMath (Applied Mathematics), First Class</i> <ul style="list-style-type: none">• Dissertation: Canonical quantisation and path integrals• Supervisor: Dr. George Jaroszkiewicz	
HONOURS & AWARDS	EPSRC Doctoral Prize, January 2014 - December 2015. EPSRC funded PhD studentship, October 2009 – April 2013.	
PUBLICATIONS & PREPRINTS	<p>[1] Catana, C., van Horssen, M., Guta, M. “Asymptotic inference in system identification for the atom maser”, <i>Phil. Trans. R. Soc. A</i> Vol. 370, No. 1979, pp. 5308–5323, 2012.</p> <p>[2] Lesanovsky, I., van Horssen, M., Guta, M., Garrahan, J.P. “Characterization of Dynamical Phase Transitions in Quantum Jump Trajectories Beyond the Properties of the Stationary State”, <i>Phys. Rev. Lett.</i> 110, 150401, 2013.</p> <p>[3] van Horssen, M., Guta, M. “Large Deviations, Central Limit and dynamical phase transitions in the atom maser”, arXiv preprint, arXiv:1206.4956 [quant-ph], 2013.</p> <p>[4] van Horssen, M., Guta, M. “Sanov and central limit theorems for output statistics of quantum Markov chains”, <i>J. Math. Phys.</i> 56, 022109, 2015.</p> <p>[5] van Horssen, M., Garrahan, J.P. “Open quantum reaction-diffusion dynamics: Absorbing states and relaxation”, <i>Physical Review E</i> 91, 032132, 2015.</p> <p>[6] van Horssen, M., Levi, E., Garrahan, J.P. “Dynamics of many-body localization in a translation-invariant quantum glass model”, <i>Physical Review B</i> 92, 100305(R), 2015 (<i>Editors’ Suggestion</i>).</p>	

EXPERIENCE

University of Nottingham, Nottingham, United Kingdom

Postgraduate Demonstrator

October 2010 – June 2013

Demonstrator in undergraduate modules. Mathematical Techniques for Electrical and Electronic Engineers 1 (year 2), Calculus, Linear Mathematics, Analytical and Computational Foundations, Maple (year 1), Foundations of Pure Mathematics (year 1), Drop-in sessions (year 1)

Summer Research Student, School of Mathematical Sciences

June 2008 – August 2008

Whispering gallery modes in optical resonators. Supervised by Dr. Stephen Creagh

TALKS AND POSTERS

Dynamics of many-body localisation in a translation invariant quantum glass model, Third Nottingham Workshop on Quantum Non-equilibrium Dynamics, University of Nottingham, Nottingham, United Kingdom, 22 June 2015.

Open quantum reaction-diffusion dynamics: absorbing states and relaxation (poster), Mathematical physics of non-equilibrium quantum systems, King's College, London, United Kingdom, 18 December 2014.

Phase purification in quantum Markov processes, Quantum information seminar, University of Nottingham, Nottingham, United Kingdom, 12 February 2014.

Quantum Sanov theorem, Quantum information seminar, University of Nottingham, Nottingham, United Kingdom, 18 March 2013.

Dynamical phases and large deviations in open quantum systems, Student conference on mathematical and theoretical aspects of Quantum Mechanics, University of Nottingham, Nottingham, United Kingdom, 7 November 2012.

The atom maser: large deviations and quantum phase transitions, Quantum Correlations Students Workshop, University of Nottingham, Nottingham, United Kingdom, 3 July 2012.

Large Deviations and Quantum Phase Transitions for the Atom Maser (poster), New Directions in Quantum Statistics, University of Nottingham, Nottingham, United Kingdom, 25 June 2012.

Large Deviations and Quantum Phase Transitions for the Atom Maser (poster), 44 Symposium on Mathematical Physics, Nicolaus Copernicus University, Toruń, Poland, 22 June 2012.

Large deviations for the atom maser, invited speaker at Analysis of Quantum Control and Open Systems, Aberystwyth University, Aberystwyth, United Kingdom, 24 May 2012.

Large deviations for the atom maser, Postgraduate probability seminar, University of Nottingham, United Kingdom, 14 March 2012.

CONFERENCES, COURSES, WORKSHOPS

7th Nottingham Symposium on Quantum Systems, University of Nottingham, Nottingham, United Kingdom, 1 October, 2015.

Third Nottingham Workshop on Quantum Non-equilibrium Dynamics, University of Nottingham, Nottingham, United Kingdom, 22-23 June, 2015.

Mathematical physics of non-equilibrium quantum systems, King's College, London, United Kingdom, 18-19 December 2014.

EPSRC NetworkPlus Workshop on Non-equilibrium Quantum Systems, University of Nottingham, Nottingham, United Kingdom, 29-30 May, 2014.

Workshop on Quantum Probability, Statistics and Control, University of Nottingham, Nottingham, United Kingdom, 4-5 July 2013.

Student conference on mathematical and theoretical aspects of Quantum Mechanics, University of Nottingham, Nottingham, United Kingdom, 7-9 November 2012.

Quantum Correlations Students Workshop, University of Nottingham, Nottingham, United Kingdom, 1-3 July 2012.

Workshop on New Directions in Quantum Statistics, University of Nottingham, Nottingham, United Kingdom, 25-26 June 2012.

44 Symposium on Mathematical Physics “New Developments in the Theory of Open Quantum Systems”, Nicolaus Copernicus University, Toruń, Poland, 20-24 June 2012.

Meeting on Analysis of Quantum Control and Open Systems, Aberystwyth University, Aberystwyth, United Kingdom, 24-25 May 2012.

Non-commutative Analysis Workshop, Imperial College London, London, United Kingdom, 24-27 January 2012.

Meeting on Quantum Probability, Noncommutative Geometry and Quantum Information, International Centre for Mathematical Sciences, Edinburgh, United Kingdom, 16-18 January 2012.

Principles and applications of quantum control engineering, The Kavli Royal Society International Centre, Chicheley, United Kingdom, 12-13 December 2011.

Trends in Quantum Probability and Stochastics, Aberystwyth University, Aberystwyth, United Kingdom, 25-26 January 2011.

46th Karpacz Winter School of Theoretical Physics “Quantum Dynamics and Information: Theory and Experiment”, Ladek Zdroj, Poland, 8-13 February 2010.