CURRICULUM VITAE

Johannes Klaas Slingerland

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Employment

10/2008	**Lecturer in Mathematical Physics** National University of Ireland, Maynooth, Ireland
2007-2009	**Schrödinger Fellow** Dublin Institute for Advanced Studies, Dublin, Ireland
2006-2007	**Postdoctoral Researcher** University of California, Riverside, USA
	Visitor in Theoretical Physics California Institute of Technology, Pasadena, USA
2004-2006	**Research Associate** Microsoft Research, Station Q, Santa Barbara, USA
winter 2005:	**Temporary Lecturer** University of Washington, Seattle, USA
2002-2004:	**Marie Curie fellow** Heriot-Watt University, Edinburgh, UK

Education

1998-2002:	**Ph.D. in Theoretical Physics** Institute for Theoretical Physics University of Amsterdam, Amsterdam, The Netherlands. Advisor: Prof. Dr. Ir. F. A. Bais
1992-1998:	Undergraduate study in Physics and Mathematics Utrecht University, Utrecht, The Netherlands
1998:	**M.Sc. in Theoretical Physics** Advisor: Prof. Dr. Erik Verlinde
1993:	**Propaedeutic diploma in Mathematics** (first year diploma) **Propaedeutic diploma in Physics.**
1995-1998:	Undergraduate study in Music Utrecht School of the Arts, Utrecht, The Netherlands Main instrument: Recorder.
1996:	**Propaedeutic diploma in Music**

Teaching Experience

My experience includes

- Full responsibility for lecture courses
- Seven years experience as a teaching assistant
- Both physics and mathematics courses: *linear algebra*, *real and complex analysis*, *mathematics for biologists*, *quantum mechanics*, *classical electrodynamics* and *lattice gauge theory* a.o.
- Exam preparation and marking
- Design of exercises and problem sessions
- Course website and software design and maintenance
- Setting up an internet notice board and mailing list for students to discuss their work with me and each other

Full courses lectured:

- **Linear Algebra (MATH 308)**, an intermediate level course at the university of Washington, Seattle.
- **Quantum Hall Effect, Topology and Conformal Field Theory**, part of a graduate course at the University of California, Santa Barbara.

Administration and Refereeing

- **Seminar organiser** - For two years (2002-4), I ran the Edinburgh Mathematical Physics Group's weekly seminar, inviting speakers and advertising.
- **Exam coordinator** - At the University of Amsterdam, I coordinated the invigilation of some of the physics exams.
- **Referee** for several scientific journals including *Physical Review Letters*, *Physical Review* and *Proceedings of the Royal Society.*
- Member of the international scientific committee of the International Workshop on Topological Quantum Computing in Dublin, September 2007.
- Other experience includes course evaluation and coordination with graders.

Languages

Dutch (native), English (fluent), German (good), French (good), Latin, Ancient Greek

Computer Skills

- **Programmer** for research and demonstration purposes in a variety of languages, a.o. *C/C++, Fortran, Pascal, Basic, Mathematica, SPSS, Matlab and Maple.*
- **Web designer** for courses and for science promotion.

Grants

2009-2013	**Science Foundation of Ireland Principal Investigator Grant** Funding for two Ph.D. students and a postdoctoral fellow.
2002-2004	**Marie Curie Fellowship** Self-funded postdoctoral fellowship awarded by the European Community through an independent peer review system.

Publications

1. F.A. Bais, J.K. Slingerland, Condensate induced transitions between topologically ordered phases, to be published in *Phys. Rev. B*, 2008, `arXiv:0808.0627`.
2. G. Kells, A. T. Bölükbaşı, V. Lahtinen, J.K. Slingerland, J.K. Pachos and J. Vala, Topological degeneracy and vortex dynamics in the Kitaev honeycomb model, 2008, `arXiv:0804.2753`.
3. L. Kampmeijer, J.K. Slingerland, B.J. Schroers and F.A. Bais, Magnetic Charge Lattices, Moduli Spaces and Fusion Rules, 53pp., *Nucl. Phys. B* 806, pp. 386-435, 2009, `arXiv:0803.3376`.
4. P. Bonderson and J.K. Slingerland, Fractional Quantum Hall Hierarchy and the Second Landau Level, *Phys. Rev. B* 78, 125323, 2007, `arXiv:0711.3204.`
5. P. Bonderson, K. Shtengel and J.K. Slingerland, Interferometry of non-Abelian Anyons, *Annals of Physics* 323 (2008), pp. 2709-2755, 2007, `arXiv:0707.4206`.
6. P. Bonderson, K. Shtengel and J.K. Slingerland, Decoherence of anyonic charge in interferometry measurements, *Phys. Rev. Lett.* 98:070401, 2006, `cond-mat/0608119.`
7. P. Bonderson, K. Shtengel and J.K. Slingerland, Probing non-Abelian statistics with quasiparticle interferometry, *Phys. Rev. Lett.* 97:016401, 2006, `cond-mat/0601242.`
8. M.H. Freedman, A. Kitaev, C. Nayak , J.K. Slingerland, K. Walker and Z. Wang, Universal manifold pairings and positivity, *Geometry and Topology*, 9:2303-2317, 2005, `math.GT/0503054`
9. S.K. Hansen, J.K. Slingerland and P.R. Turner, Abelian Homotopy Dijkgraaf-Witten theory, *Adv. Theor. Math. Phys.* 9:321–353, 2005 `math.QA/0410179`
10. F.A. Bais, B.J. Schroers and J.K. Slingerland, Hopf symmetry breaking and confinement in (2+1)-dimensional gauge theory, *JHEP* 05, 068, 61pp., 2003, `hep-th/0205114.`
11. F.A. Bais, B.J. Schroers and J.K. Slingerland, Broken quantum symmetry and confinement phases in planar physics, *Phys. Rev. Lett.* 89:181601, 2002, `hep-th/0205117`
12. J.K. Slingerland, *Hopf Symmetry and its breaking; Braid Statistics and Confinement in Planar Physics*, Ph.D. thesis, 141pp., 2002
available at `http://www.stp.dias.ie/~slingerland/`
13. J.K. Slingerland and F.A. Bais, Quantum groups and nonabelian braiding in quantum Hall systems, *Nucl. Phys. B*, 612:229–290, 2001, `cond-mat/0104035`
14. T.H. Koornwinder, B.J. Schroers, J.K. Slingerland and F.A. Bais, Fourier transform and Verlinde formula for the quantum double of a finite group,
J.Phys. A:Math. Gen., 32:8539–8549, 1999, `math.QA/9904029`.

Recent Conferences and Seminars

1. Organizer of the 'Sixth Symposium on Topological Quantum Computation', Institute for Advanced Studies, Dublin, September 15-17, 2008.
2. *Topological Quantum Computation*, lecture series at the CoQuS Summer School, University of Vienna, Austria, September 8-12, 2008.
3. Invited speaker, Nordita conference on 'Conformal field theory approach to quantum Hall physics - non-Abelian statistics and quantum computing', Stockholm, August 13-16, 2008.
4. *Condensation induced transitions between topological phases* talk at the workshop 'Quantum Computation with Topological Phases of Matter', Banff International Research Station, Banff, Canada, July 20-25, 2008.
5. Visit to Microsoft Station Q, including participation in the Microsoft Summer Meeting, UC Santa Barbara, June 25 - July 5, 2008.
6. Visit to Nordita, including KTH/Nordita/SU seminar in theoretical physics, *Fractional quantum Hall trial wave functions*, Stockholm, May 31-June 8, 2008.
7. Invited speaker, International Workshop on the Mathematical Foundations of Quantum Control and Quantum Information Theory, QCI2008, Madrid, May 26-30, 2008.
8. *Fractional Quantum Hall hierarchy and the second Landau level*, Edinburgh Mathematical Physics Group seminar, Edinburgh, January 23, 2008.
9. Visit to Microsoft Station Q, including Q-seminar, *Fractional Quantum Hall hierarchy and the second Landau level*, University of California, Santa Barbara, December 17-20, 2007.
10. Invited participant, Station Q Fall Meeting, Microsoft Station Q, University of California, Santa Barbara, December 14-16, 2007.
11. Invited speaker, Mini-Symposium on Topological Quantum Computation, Max Planck Institut für Quantenoptik, Garching, December 10-11, 2007.
12. Invited visit to the University of Leeds, including talk *Interferometry with non-Abelian anyons*, Leeds, November 5-6, 2007
13. Invited speaker and member of the international scientific committee, International Workshop on Topological Quantum Computing, Hamilton Mathematics Institute, Trinity College, Dublin, September 10-14, 2007
14. *Anyon models: from fusion rules to observable parameters*, Invited talk at the Amsterdam Summer Workshop on Low-D quantum condensed matter, Center for Mathematical Physics, Amsterdam, July 2-7, 2007.
15. Invited speaker, Mini-Symposium on Topological Phases and Quantum Computation, Institute for Quantum Optics and Quantum Information, Innsbruck, June 29-30, 2007.
16. *Anyon models Theory, Interferometry, Bose condensation*, invited talk at the Mini-Symposium on Topological Quantum Computation, Maynooth, January 6-7, 2007.
17. *Measuring anyonic charges by interferometry*, invited talk at the Symposium on Quantum Technologies, Cambridge, United Kingdom, September 1, 2006.
18. International Congress on Mathematical Physics - ICMP 2006 and Young Researchers Symposium, Rio de Janeiro, August 5-11, 2006
19. *Quantum group symmetry breaking and Bose condensation in non-Abelian Hall states*, invited talk at the KITP Conference on Topological Phases and Quantum Computation, Kavli Institute of Theoretical Physics, UCSB, Santa Barbara, May 18, 2006.
20. *Pedagogical lecture on Hall effects and topological field theory* in the program on Topological Phases and Quantum Computation, Kavli Institute of Theoretical Physics, UCSB, Santa Barbara, March 9, 2006.