Biographical Sketch

Bruno Nachtergaele

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Professional Preparation

UG Inst.:	University of Leuven	Physics	Licenciaat 1984
G Inst.:	University of Leuven	Theoretical Physics	Ph.D. 1987
P Inst.:	Princeton University	Mathematical Physics	09/01/1991–06/30/1993

Appointments

2007–2010	Department Chair of Mathematics, University of California, Davis.
2000–	Professor of Mathematics, University of California, Davis.
1996–2000	Associate Professor of Mathematics, University of California, Davis.
1993–1996	Assistant Professor of Physics, Princeton University.
1991–1993	Instructor, Department of Physics, Princeton University.
1991	Research Associate, Physics Department, K.U. Leuven, Belgium.
1989–1990	Research Associate, Depto de Física, U. de Chile, Santiago de Chile.
1984–1988	Researcher I.I.K.W., Physics Department, K.U. Leuven, Belgium.

Synergistic Activities

1) Graduate Group in Applied Mathematics, UC Davis, member (10/1996–present), chair (07/2001–07/2004). 2) UC Davis Academic Senate Committee on Research, chair (08/1999–08/2001). 3) UC Davis Academic Senate Committee on Planning and Bugdet, chair (2006-07 and 2008-09). 4) UC Davis Academic Senate, vice-chair (2011-12) and chair (2012-14). 5) The `arXiv`: moderator `math-ph/math.MP` section (05/1998–02/2014, member of Physics Advisory Board (04/2005–present). 6) International Association of Mathematical Physics, member Executive Committee (01/2006–2011); Vice-President (2009-11).

Editorial Activities

1) Journal of Mathematical Physics, Editor, 01/01/2006–present. 2) Reviews in Mathematical Physics, Associate Editor, 01/01/2004–present. 3) Mathematical Physics Electronic Journal, Editorial Board, 03/01/2002–present.

Short Stays

Newton Institute, Cambridge, UK (July 4 – 16, 1993). CNRS Luminy, France (May 15 – August 15, 1995). Erwin Schrödinger Institute, Vienna, Austria (August 26 – September 8, 1995). EPFL, Lausanne (October 4–25, 1998). ETH, Zurich (October 26–31, 1998). CPT, University of Marseille (July 1999). Courant Institute, New York University (14–23 October 2000, 28 March – 6 April 2001, 4–15 September 2001). Department of Mathematics, University of Bologna (June 2-15, 2001). Erwin Schrödinger Institute for Mathematical Physics, Vienna (Fall 2004, Spring 2011). Université de Marseille (April 2005). Institut Mittag-Leffler, Djursholm, Sweden (Fall 2010).

Funding history
1) Fondación Nacional de Desarrollo Científico y Tecnológico, Chile: one year (1990). 2) National Science Foundation: 1996 - present, continuous funding including a Vertical Integration of Graduate Research and Education (VIGRE) training grant, July 2002- June 2007, and a Focused Research Group on Quantum Spin Systems: Theory and Applications in Quantum Computation, July 2008 - June 2011. 3) Department of Education: Graduate Assistance in Areas of National Need (co-PI):, 2000 - 2010.

Honors
International Congress of Mathematicians, Beijing, 2002, invited lecture.
Elected Fellow of the American Association for the Advancement of Science (2007).
Senior Research Fellow, Erwin Schrödinger Institute for Mathematical Physics, Spring 2011.
Fellow of the American Mathematical Society (Inaugural Class, 2012).

Thesis Advisor and Postgraduate-Scholar Sponsor
Thesis Advisor: Shannon Starr (U Rochester), Justin Abbott (Northrop Corporation), Li Lei, Nigie Shi, Austin Calder (National Security Agency), Jeremy Clark (U Helsinki), Spryridon Michalakis (Institute for Quantum Information, Caltech), Ram Puri, Hillel Raz (U Cardiff), Katy Marchand, Jaideep Mulherkar (Dhirubhai Ambani Institute of Information and Communication Technology), Stephen Ng (U Rochester), Anna Vershynina (TU Aachen), Amanda Young (UC Davis), Matthew Cha(UC Davis).
Postgraduate-Scholar Sponsor: Oscar Bolina (Kaplan-China.), Jean-Bernard Bru (University of the Basque Country), Pierluigi Contucci (U. Bologna), Wolfgang Spitzer (Fern-Universität Hagen), Daniel Ueltschi (U Warwick), Tom Michoel (Roslin Institute, U Edingurgh), Robert Sims (U Arizona), Yoshiko Ogata (U of Tokyo), Motohisa Fukuda (TU Munich), Sven Bachmann (LUM, Munich), Jogia Bandyopadhyay (UC Davis), Michael Bishop (UC Davis), Dirk-André Deckert (LUM, Munich).

Selected Publications

1. M. Fannes, B. Nachtergaele, and A. Verbeure, *The equilibrium states of the Spin-Boson model*, Comm. Math. Phys., **114**, 537-548 (1988)
2. M. Fannes, B. Nachtergaele, and R.F. Werner, *Finitely Correlated States on Quantum Spin Chains*, Comm. Math. Phys. **144**, 443-490 (1992)
3. M. Aizenman and B. Nachtergaele, *Geometric Aspects of Quantum Spin States*, Commun. Math. Phys., **164**, 17-63 (1994)
4. E.H. Lieb and B. Nachtergaele, *The Stability of the Peierls Instability for Ring-Shaped Molecules*, Phys. Rev. B, **51**, 4777–4791 (1995)
5. B. Nachtergaele, *The spectral gap for some quantum spin chains with discrete symmetry breaking*, Commun. Math. Phys., **175**, 565-606 (1996)
6. B. Nachtergaele and H.-T. Yau, *Derivation of the Euler equations from quantum dynamics*, Commun. Math. Phys., **243**, 485-540 (2003) `arXiv:math-ph/0209027`.
7. B. Nachtergaele and S. Starr, *Ferromagnetic Lieb-Mattis Theorem*, Phys. Rev. Lett., **94**, 057206 (2005) `arXiv:math-ph/0210017`.

8. B. Nachtergaele and R. Sims, *Lieb-Robinson Bounds and the Exponential Clustering Theorem*, Commun. Math. Phys., **265**, 119-130 (2006), `arXiv:math-ph/0506030`.

9. S. Bachmann, S. Michalakis, B. Nachtergaele and R. Sims, *Automorphic Equivalence within Gapped Phases of Quantum Lattice Systems*, Commun. Math. Phys. **309**, 835–871 (2012) `arXiv:1102.0842`

10. S. Bachmann, and B. Nachtergaele, *Product vacua with boundary states and the classification of gapped phases*, Commun. Math. Phys., **329**, 509-544 (2014), `arXiv:1212.3718`.