

# CV Prof. Dr. Daniel Braun

## CONTACT

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## EMPLOYMENT AND EXPERIENCE

**Full Professor** of Theoretical Physics (head of Theoretical Quantum Optics group, tenured, W3), *Eberhard Karls Universität Tübingen*, 10/2013 – today

**Freelance scientific consultant** for the Centre National d'Etudes Spatiales, Toulouse (satellite remote sensing) 03/2011- 12/2013

**Full Professor** of Theoretical Physics (tenured), *Université Paul Sabatier, Toulouse, France* 10/2004 – 09/2013

**R&D Engineer**, Infineon Technologies, *Munich, Germany*, 10/2000-09/2004

- Long-term delegate at Altis Semiconductor in *Corbeil-Essonnes, France*, 10/2003-09/2004
- Long-term delegate at the IBM T.J. Watson Research Centers in *Yorktown Heights and East Fishkill, NY*, 10/2000-09/2003

**Habilitation** at the Institute of Theoretical Physics, *University of Essen, Germany*, 2000

**Assistant Professor/Post-Doc** at the Institute of Theoretical Physics, *University of Essen, Germany* 10/1995 – 09/2000

**Teaching Assistant**, Institute of Theoretical Physics, *University of Stuttgart, Germany*, 1991-1992

**Internship**, *Max Planck Institute of Solid State Physics, Stuttgart*, 03/1988 (Prof. Klaus von Klitzing's group)

## SCIENTIFIC EDUCATION

**Doctor of Philosophy**, Physics, University of Paris XI, France, 1995. PhD Thesis "*Spectral Properties of Disordered Mesoscopic Conductors*", graduated with honors "*très honorable*" (~ *magna cum laude*). Supervisor: Prof. Gilles Montambaux

**Diplom Physiker**, Physics, University of Stuttgart, Germany, 1992. Diploma Thesis "*Investigation of the Dynamics of Rotational Tunneling Systems*", graduated with distinction (highest possible honors). Supervisor: Prof. Ulrich Weiss

**Master of Arts**, Physics, State University of New York at Stony Brook, NY (as a Fulbright Scholar), 1990

**Abitur (Highschool Diploma)**, Gymnasium Spaichingen, Baden-Württemberg, final grade 1.0 (best possible grade), 1986

## AWARDS AND DISTINCTIONS

- **Prize** Best Ph.D. presentation of the "Ecole Doctorale de Toulouse" for my Ph.D. student Ludovic Arnaud (1000 Euros for the Laboratoire de Physique Théorique), 2009
- **Distinction** diploma "Diplomphysiker" with distinction (University Stuttgart), 1992
- **Fulbright Scholar** SUNY Stony Brook, NY, full grant, 1989-1990
- **Scholar** German National Academic Foundation, 1989-1992
- **2<sup>nd</sup> and 3<sup>rd</sup> Prizes** German National Mathematics Competition 1985, 1986

## RESPONSIBILITIES

- **Research interests**

- Quantum metrology, quantum information theory, quantum optics, quantum thermodynamics, mesoscopic solid state physics, quantum chaos, nano-magnetism, and spintronics
- 84 articles in peer-reviewed journals
- 19 granted patents
- 31 invited and 45 contributed talks at international conferences, 84 invited talks and lectures at universities and research institutes, 8 popular scientific talks
- Invited research stays at University Waterloo; Joint Quantum Institute (NIST, Gaithersburg); Texas A&M University at Doha, Qatar; University of Maryland at College Park; Korea University; Korean Institute of Advanced Studies (KIAS); King's College, London; ICTP Trieste, Italy; St. Petersburg University, Russia; Imperial College, London

Some significant publications (altogether h=29, 3330 citations on Google scholar)

- [Intrinsic measurement errors for the speed of light in vacuum](#), Daniel Braun, Fabienne Schneider, and Uwe R. Fischer, Classical and Quantum Gravity 34, 175009 (2017)
- [Heisenberg-limited sensitivity with decoherence-enhanced measurements](#) D Braun, J Martin, Nature Communications 2, 223 (2011)
- [Quantifying quantumness and the quest for Queens of Quantum](#) O Giraud, P Braun, D Braun, New Journal of Physics 12 (6), 063005
- [Creation of entanglement by interaction with a common heat bath](#), D Braun, Physical Review Letters 89 (27), 277901 (2002)
- [Quantum computing using dissipation to remain in a decoherence-free subspace](#) A Beige, D Braun, B Tregenna, PL Knight, Physical Review Letters 85 (8), 1762 (2000)

- **Teaching**

- Numerous lectures in all main courses of theoretical physics, as well as on quantum information and quantum optics
- Supervision of 3 post-docs, 6 PhD students, and 13 master students
- Member of the PhD or habilitation jury of 13 PhD students and scientists

- **Governance of research programs, organization of conferences etc.**

- Member of the board of the European COST Action MP1006 “Fundamental Problems in Quantum Physics”, 2011-2013
- Member of the board of the French national research initiative (GdR) “Quantum Information – from Foundations to Applications”, 2010 – 2013
- Coordinator of three GDRI-471 French-Russian research projects 2009-11, 7,800 euros
- Coordinator of a DGA research project, “Semiclassical analysis of quantum algorithms”, 2007-2010, about 120,000 euros
- Co-coordinator of an ANR “young researcher” project “Entanglement, decoherence and quantum algorithms: quantum information with a few qubits”, 2006-2008, 150,000 Euros
- Organizer or Co-organizer of 6 international schools and conferences
- Member of a French diplomatic mission to Taiwan for enhancement of scientific collaboration in theoretical sciences

- **Scientific self-administration**

- Elected Member of the Faculty Council (“Fakultätsrat”), University Tübingen, 2017-today
- Elected Member of the “Council of the Pôle Scientifique - Sciences de la Matière”, University Toulouse Paul Sabatier, 2011-2013
- Member of the Council of IRSAMC (Federation of Physics and Chemistry Laboratories, University Toulouse Paul Sabatier), 2007 - 2011
- Member of the Strategy Council Group “Future of IRSAMC”, 2006
- Elected Member of the Council of the Physics Department of the University of Essen 1996-98

- **Member of the editorial board** of the journal: Quantum Measurements and Quantum Metrology
- **Reviewer** of scientific journals: Nature Physics, Nature Communications, Annals of Physics, Proceedings of the Royal Society A, Physical Review Letters, Physical Review A, Physical Review B, European Physics Letters, European Physical Journal B, European Physical Journal D, Journal of Physics A: Math. Gen., Journal of Physics B: At. Mol. Opt. Phys., New Journal of Physics, Physics Letters A, International Journal of Theoretical Physics, International Journal of Quantum Information, Quantum Measurements and Quantum Metrology, Sensors
- **Reviewer for the** U.S. Department of Energy, European Commission, Israel Science Foundation, French Agence Nationale de la Recherche (ANR), Swiss National Science Foundation (Fonds National Suisse), Belgian "Fonds de la Recherche Scientifique" (FRS-FNRS), Studienstiftung des Deutschen Volkes (German National Academic Foundation)

Tübingen, 23.11.2017