CHRISTOPHER . JON . OLIVER . VERZIJL , PHD

CURRICULUM VITAE

NATIONALITY	Dutch (EU)
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EXPERIENCE

2013 – PRESENT — ABN AMRO Bank N.V. — Amsterdam, Netherlands
ROLE **Quantitative Risk Specialist**

As a quant at Private Banking International, I work mainly on projects centered around risk modeling & analytics for roughly 100K global client portfolios:

- developing risk-bandwidth and -budget models for monitoring client portfolios,
- leading a team of 3 to develop an integrated platform for performance & risk analysis,
- leading a team of 5 to develop a business-intelligence platform for investment products & portfolios.

I also work on research projects, such as:

- developing novel risk visualizations to build a risk-aware investment process,
- assessing risk/return tradeoffs in active- and passive management in our mutual-fund business,
- analyzing Monte Carlo performance on pricing and risk of structured products.

2012 – 2013 — ABN AMRO Bank N.V. — Amsterdam, Netherlands
ROLE **Officer Client Investment Risk Modeling**

As a risk modeling officer for Private Banking International, I:

- developed Monte Carlo models and structured-product risk-factsheets for Global Advisory guidelines,
- and data-management tools for the risk-analysis of client portfolios

2013 — Scientific Computing & Modeling N.V. — Amsterdam, Netherlands
ROLE **Postdoctoral Researcher – Scientific Programmer**

Worked on the integration of our molecular-transport code into the commercial ADF/BAND DFT code (scaling up to supercomputer calculations; ADF2013). This included giving tutorials and work on developer documentation and a proposed GUI front-end.

2008 – 2012 — Foundation for Fundamental Research on Matter — Utrecht/Delft, Netherlands
ROLE **PhD Researcher – OIO**

My doctoral research improved models for electronic transport in single-molecule nanostructures, to understand molecular-electronics experiments at the Kavli Institute of Nanoscience in Delft:

- work addressed quantum transport, quantum chemistry and parallel algorithm design,
- and released in the commercially available *Amsterdam Density Functional* quantum-chemistry code.

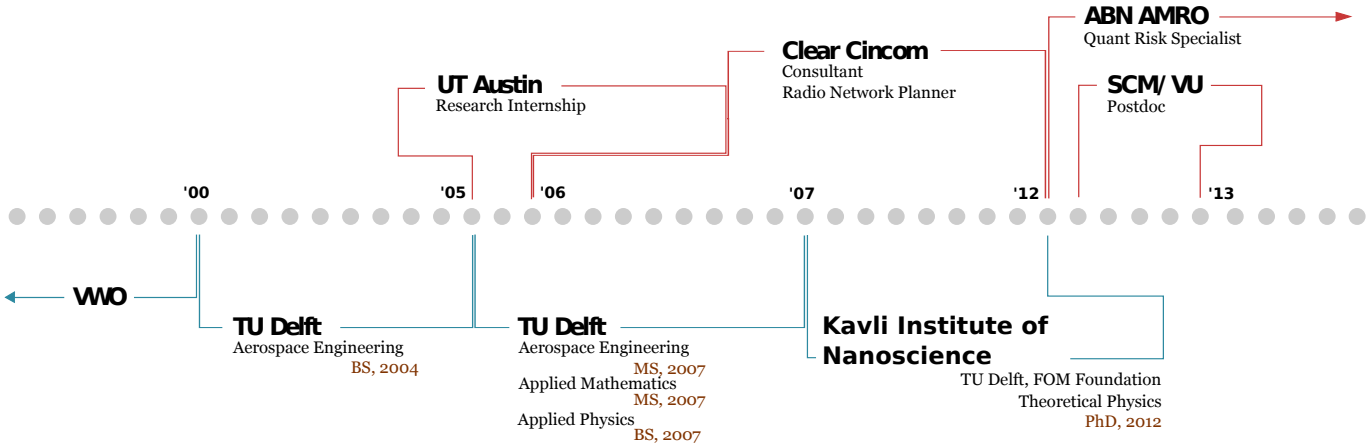
My teaching experience in Delft included designing and teaching a custom graduate-level tutorial, and coaching students in a team-based computational physics course, in collaboration with Michigan State University Physics.

2006 – 2010, 2012 — Clear Cincom B.V. — Delft, Netherlands
ROLE **Consultant – Radio Network Planner**

In the field and in the lab, my work covered test design, execution & algorithmic data-analysis:

- working on the test & validation of the HSL and Hanzelijn high-speed rail lines, and on the annual coverage-tests for the Netherlands' national railway network, and
- authoring a number of working papers outlining a GSM-R test methodology which was used as a best-practice approach by the company in the Netherlands and Tunisia.

Education & Coursework



Nov 2007 – Nov 2012	Delft University of Technology (TU Delft) Kavli Institute of Nanoscience	Netherlands
Degree	**PhD in Physics**	
Advisor(s)	Dr. J.M. Thijssen, Prof. Dr. Ir. H.S.J. van der Zant	
Thesis	*On Conductance and Interface Effects in Molecular Devices*	
	Doctoral research on the theory and computation of quantum transport in molecular systems, performed in the Theoretical Physics group under Dr. Thijssen, in collaboration with the Molecular Electronics & Devices experimental group under Prof. van der Zant and industrial partner Scientific Computing and Modeling N.V. Taught at the Faculty of Applied Sciences, Delft University of Technology and at the Department of Physics, Michigan State University.	
Mar 2005 – Nov 2007	Delft University of Technology EEMCS, Department of Applied Mathematics	Netherlands
Degree	**MS in Applied Mathematics, *cum laude*** [1]	
Advisor(s)	Dr. W.T. van Horssen	
Thesis	*On the Determination of Approximations of Integrals for Few–Body Gravitational Problems*, specialization in Mathematical Physics.	
Courses	Functional analysis, stochastic processes, metric topology, measure theory, special functions, tensor analysis, mathematical methods for physics, risk analysis, advanced modeling techniques, scientific computing & simulation, numerical methods for large systems, nonlinear differential equations, dynamical systems theory and computational fluid dynamics. [124 ECTS]	
Sep 2004 – Oct 2007	Delft University of Technology Aerospace Engineering	Netherlands
Degree	**MS in Aerospace Engineering, *cum laude***	
Advisor(s)	Ir. R. Noomen	
Thesis	*On the Integral–Conservative Numerical Solution of Few–Body Gravitational Problems*, specialization in Astrodynamics & Satellite Systems.	
Courses	Astrodynamics, rocket motion, precise orbit–determination of satellites, earth–oriented space research, sustainable development, geophysical applications of satellite measurements, astronomy, numerical analysis, complex analysis and partial differential equations. [123.5 ECTS]	
Fall 2005	University of Texas at Austin	Austin, TX, USA
Role	**Graduate Intern**	
	Developed targeting algorithms for Earth-to-Moon ballistic–capture trajectories for spacecraft, during a research internship at University of Texas at Austin's Center for Space Research, with Dr. Ocampo.	

[1] Top–5% designation, roughly equivalent to the U.S./German *summa cum laude*.

	Delft University of Technology	
SEP 2003 – MAR 2007	Applied Sciences, Department of Applied Physics	Netherlands
DEGREE	**BS in Applied Physics, *cum laude***	
ADVISOR(S)	Dr. Ir. H.S.J. van der Zant, E.A. Osorio, MS	
THESIS	*Transport through Single OPV–5 Molecules.*	
COURSES	Electrodynamics, wave mechanics, classical & quantum mechanics, statistical physics, solid–state physics, transport theory, Fourier analysis, stochastic signal analysis, computational physics, mesoscopic physics, philosophy of science and debating skills. [91 ECTS]	
	Delft University of Technology	
SEP 2000 – OCT 2004	Aerospace Engineering	Netherlands
DEGREE	**BS in Aerospace Engineering**	
ADVISOR(S)	Ir. J. Buursink, G. La Rocca, MS & G. Nino Martinez, MS	
THESIS	*SIREN Mission – Feasibility Study for a Low Cost Space Telescope*, a collaborative engineering exercise spanning 10 weeks of full–time work with a team of 8.	
COURSES	Calculus, linear algebra, ordinary & partial differential equations, engineering mechanics, fluid dynamics, supersonic & compressible aerodynamics, aircraft–performance theory, flight dynamics, gas–turbine theory, thermodynamics, orbital mechanics, electrodynamics, CAD–design, finite–element analysis, aircraft stress– and structural analysis, materials & manufacturing, systems engineering, air–transport economics, business management and oral & written presentation skills. [180 ECTS]	
	H. Milton Peters College	
1994 – 2000	VWO[2] (high school)	St. Maarten, Netherlands Antilles
DEGREE	**Class of 2000, *Valedictorian***	
COURSES	Course-work for highest level of Dutch national secondary examinations in Dutch, English, French, Calculus, Statistics, Physics, Chemistry and Biology.	

LANGUAGES & INTERNATIONAL EXPERIENCE

- Native speaker of English and Dutch
- Conversational in French, Spanish and Portuguese
- Attended and presented research to scientific audiences at conferences in the Netherlands, U.S.A., Switzerland, Belgium and Denmark, while participating in the FOM Program-86 national collaboration and EU Framework Program 7 “SINGLE” and “ELFOS” international collaborations.

GRANTS, HONORS & AWARDS

- Netherlands National Computing Facilities Grant on the SARA Supercomputer Cluster
  – 101641 hours for our “NEGF+DFT in BAND for Molecular Transport" production project (*2011*)
  – 4934 hours for our “NEGF+DFT in BAND for Molecular Transport" pilot project (*2010*)
- Delft University of Technology – University Fund Delft Scholarship for studies abroad (*2005*)
- Prof. Dr. Ir. H.J. van der Maas Foundation Scholarship for studies abroad (*2005*)
- Delft University of Technology – Sterbeurs Scholarship on matriculation (*2000*)
- H. Milton Peters College – Valedictorian (*2000*)
- Dutch Mathematics A-lympiad – placed second with team representing St. Maarten (*2000*)

AFFILIATIONS & INTERESTS

- Society for Industrial & Applied Mathematics member
- Travel, salsa, intercultural communication, negotiation, theology. I am interested in the many ways people relate to each other across cultures, faiths, and the negotiating table, in particular as it concerns constructive conflict-resolution.

[2] Voorbereidend Wetenschappelijk Onderwijs, transl. Scientific Preparatory School.

PROJECTS & DEVELOPMENT

Programming Languages, Codes & Environments

- Experienced with MATLAB, PYTHON and FORTRAN for modeling and high-performance computing,
- Experienced with SAS, SQL for database programming and statistical/predictive analysis,
- Some project-based experience with C, C++, JAVA, R, PERL, VB, VBA, MAPLE and MATHEMATICA.

Project Portfolio

- Larger Projects
  - Performance & Risk Analytics, portfolio analysis reporting platform (SAS+APT+FACTSET+BLOOMBERG)
  - SAS-MI, management information reporting platform (SAS)
  - Enhanced Reporting Framework (SAS)
  - Supercomputer-class Molecular (Quantum-)Transport Code (FORTRAN)
  - Investment Game ("World Cup 2014 Edition") model and transaction-processing system (MATLAB+SAS+EXCEL)

- Smaller Projects
  - Networked & Geo-mapped SIR epidemic models (PYTHON)
  - Clustering analysis & visualization for topic-model analysis of text corpora (PYTHON)
  - Log-periodic Power-law Bubble & Crash Model (R)
  - Risk-bandwidth Optimization & Visualization (MATLAB)
  - Parallelized electrostatic (image-charges) physics model (PYTHON)
  - QuantCup 2011 competition entry implementing an exchange matching algorithm (C++)
  - Integral-conservative simulations for 3- and 4-body spacecraft orbits (FORTRAN)

PUBLICATIONS & TALKS

Scholarly Publications

- C. J. O. Verzijl, *Floating Risk Bandwidths*,
  ···(manuscript in preparation)
- C. J. O. Verzijl, *An Investment Game*,
  ···(manuscript in preparation)
- S. Lumbreras, P. Mealy, C. J. O. Verzijl and S. F. Way,
  Quantifying Convergence in the Sciences
  (*¿Convergen las diferentes disciplinas de conocimiento? evidencia cuantitativa*),
  ··· Pensamiento 71, 269 (2015)
- C. J. O. Verzijl, J. A. Celis Gil, M. L. Perrin, D. Dulić, H. S. J. van der Zant and J. M. Thijssen,
  Image Effects in Transport at Metal-Molecule Interfaces,
  ··· J. Chem. Phys. 143, 174106 (2015)
- M. Strange, J. S. Seldenthuis, C. J. O. Verzijl, J. M. Thijssen, G. C. Solomon,
  Interference enhanced thermoelectricity in quinoid type structures,
  ··· J. Chem. Phys. 142, 084703 (2015)
- C. J. O. Verzijl, J. .S. Seldenthuis and J. M. Thijssen,
  Applicability of the Wide-Band Limit in DFT-based Molecular Transport Calculations,
  ··· J. Chem. Phys. 138, 094102 (2013)
- M. L. Perrin, C. J. O. Verzijl, C. A. Martin, A. J. Shaikh, R. Eelkema, J. H. van Esch, J. M. van Ruitenbeek, J. M. Thijssen, H. S. J. van der Zant and D. Dulić, *Large Tunable Image-Charge Effects in Single-Molecule Junctions*,
  ··· Nature Nanotechnology 8, 282-287 (2013)
- C. J. O. Verzijl and J. M. Thijssen, *A DFT-based Molecular Transport Implementation in ADF/Band*,
  ··· J. Phys. Chem. C, 116 (46), pp. 24393-24412 (2012)
- C. J. O. Verzijl, *On Conductance and Interface Effects in Molecular Devices*,
  ··· Casimir PhD Series 2012-22, ISBN 978-90-8593-143-0 [Dissertation]

Technical Reports & Working Papers

- K. Burghardt, M.-P. Hasne, J. Huang, M. Ingram, B. Song, C .J. O. Verzijl,
  A Breakdown of Modeling Assumptions of Ebola And How To Fix Them – Santa Fe Institute CSSS15 Working Paper (2015)
  ···(in preparation for journal submission)
- S. Lumbreras, P. Mealy, C. J. O. Verzijl, S. F. Way,
  Quantifying Convergence in the Sciences – Santa Fe Institute CSSS15 Working Paper (2015)
  ···(accepted in Pensamiento)

- C.J.O. Verzijl and A.H. Bearda, Product Risk Classification for Asia – ABN AMRO (2014)
- C.J.O. Verzijl and P. Groenewoud, Expected Returns Using APT – ABN AMRO (2013)
- C.J.O. Verzijl, Monte Carlo Modeling Accuracy – ABN AMRO (2013)
- C.J.O. Verzijl, Investigation of Portfolio-Based Risk Bandwidths – ABN AMRO (2013)

- C.J.O. Verzijl, Transport in BAND – Scientific Computing & Modeling (2014)

- C.J.O. Verzijl, Planning Note SNCF Tunisia – Clear CinCom (2009)
- C.J.O. Verzijl, Alternative Coverage Methodology Proposal – Clear CinCom (2008)
- C.J.O. Verzijl, Signal Level Measurement Methodology – Clear CinCom (2008)

Invited Talks

- Perspective on Transport in BAND
  SCM / Vrije Universiteit Theoretical Chemistry in Amsterdam, Netherlands (August 2013)
- Rolling a NEGF+DFT code for Molecular Transport
  Université de Mons–Hainaut, Belgium (October 2008)

Contributed Talks

- Image-Charge Effects in Zn-Porphyrin Junctions
  ELFOS Project workshop in Copenhagen, Denmark (January 2012)
- A Theory for (almost) Everything
  Delft–Leiden workshop on Molecular Transport in Delft, Netherlands (April 2011)
- To Trap a Thiol with NEGF
  FOM–86 Project workshop in Utrecht, Netherlands (November 2010)
- Research Progress: NEGF Transport Code
  SINGLE Project workshop in Mons, Belgium (August 2010)
- Computational Methods for Molecular Transport
  FOM–86 Project workshop in Utrecht, Netherlands (April 2008)

Posters

- M.L Perrin, C.J.O. Verzijl, C.A. Martin, J.M. Thijssen, H.S.J. van der Zant, D. Dulić
  Large tunable image-charge effects in single-molecule junctions
  CECAM workshop on Molecular electronics: Quo vadis?, Germany (2013)
- J.M. Thijssen and C.J.O. Verzijl, A DFT-based Molecular Transport Implementation in ADF/Band
  CECAM workshop on Quantum Transport in Molecular Nanostructures, Ireland (2012)
- J.S. Seldenthuis, C.J.O. Verzijl, H.S.J. van der Zant and J.M. Thijssen,
  Calculating Current Through Single Molecules: Electrical Motors and Contact Configurations
  Physics@FOM Conference, Netherlands (2011)
- C.J.O. Verzijl and J.M. Thijssen, Ab-Initio Transport through Single-Molecule Junctions
  CECAM workshop on Transport Phenomena in Molecular Nanostructures, Zurich, Switzerland (2010)
- J.S. Seldenthuis, C.J.O. Verzijl, J.M. Thijssen and H.S.J. van der Zant,
  Ab-initio Calculations on Transport through 3-Terminal Single-Molecule Junctions
  Physics@FOM Conference, Netherlands (2010)
- C.J.O. Verzijl and J.M. Thijssen, Molecular Transport By Ab-Initio DFT+NEGF
  International Conference on Molecular Electronics, Emmetten, Switzerland (2010), and
  Casimir Days, Arnemuiden, Netherlands (2010)
- C.J.O. Verzijl, J.S. Seldenthuis, H.S.J. van der Zant and J.M. Thijssen,
  Ab-initio Calculations on Transport through Three-Terminal Single-Molecule Junctions
  Physics@FOM Conference, Netherlands (2009)
- C.J.O. Verzijl, M. Leijnse and J.M. Thijssen, Molecular Transport by ab-initio DFT + NEGF
  Casimir Days, Heeg, Netherlands (2008)

Business Publications

- C.J.O. Verzijl and J.S. Seldenthuis, Elektrisch transport door een enkel molecuul – FOM Yearbook, FOM Foundation (2009)
- C.J.O. Verzijl and V.M.A. Tiesinga, Doing Business in Japan Case Study, V.S.V. Leonardo da Vinci and Netherlands Aerospace Group (2004).

Teaching Material

- C.J.O. Verzijl, Performance and Risk Tutorial (2015)
- J.S. Seldenthuis, J.M. Thijssen, C.J.O. Verzijl and E.S. McGarrity, Coding Notes for ICCP (2013)
  C.J.O. Verzijl and E.S. McGarrity, Coding Notes for ICCP (2010)
- J.S. Seldenthuis and C.J.O. Verzijl, An Introduction to Quantum Chemistry Calculations with GAMESS (2009)
- C.J.O. Verzijl, Notes on the Restricted 3-Body Problem ICCP Project (2009)

Conferences, Courses and Workshops

Workshops Organized

- Factset Workshop – organized a workshop to explore tooling and workflow issues for portfolio-management and -analysis for our risk, equity- & fixed income teams, together with Factset (vendor) [1d] (May 2015)
- Investment Strategy & Portfolio Expertise Offsite – organized a departmental workshop on cross-disciplinary collaboration between portfolio management, equity- & fixed income research, and risk modeling at ABN AMRO PBI [1d] (March 2015)
- SAS Enterprise Guide Training – organized a custom workshop for our team on Enterprise Guide (software) for team-members new to data analysis and development [1d] (November 2014)

Professional Development

- Chartered Financial Analyst – CFA Level III candidate
- Chartered Financial Analyst – passed CFA Level II exam (July 2013 – present)
- GPS Leadership Development Course – professional development course by internal & external trainers [1w] (December 2014 & February 2015)

- PRACE Autumn School 2011 – workshop of the PRACE Research Infrastructure on Advanced Hybrid (GPU) Programming, hosted at the Commissariat à l'Énergie Atomique's TGCC center at the DAM Ile-de-France, Bruyères-le-Châtel, France [3d] (October 2011)
- Computational Multiphase Flow – workshop by the J.M. Burgers Center Research School for Fluid Mechanics [3d] (April 2010)

- GSM Indoor Coverage Solutions – training by Wray Castle Ltd. [2d] (November 2006)

Professional Conferences & Workshops

- QuantCon 2016 – NYC [1d] (April 2016)
- Big Data Analytics Europe 2016 – Amsterdam [1d] (March 2016)

- SAS User Forum – annual user conference hosted by the SAS Institute, Utrecht [1d] (October 2014)
- SunGard User Summit – conference on risk and portfolio management, London [1d] (October 2013)

- Writing a Good Project Summary – workshop on effective grant-writing. TU Delft's Valorisation Center [1d] (October 2010)
- How to Write a Competitive Proposal for Framework 7 – workshop on effective grant-writing for EU Framework Programme grants, Marie Curie Fellowships and ERC Starting & Advanced Grants. TU Delft's Valorisation Center / Hyperion Ltd. [1d] (October 2010)
- FOM Young Scientist's Day workshop, Write-it-Right mini-course on science communication [1d] (December 2009)

- ITIM Intercultural Communications workshop [1d] (May 2003)

Academic Conferences & Workshops

- Complex Systems Summer School 2015 – a selective, month-long interdisciplinary research school on methods and topics in complex systems science at the Santa Fe Institute for Complex Systems in Santa Fe, New Mexico, USA [4w] (July 2015)

- Physics@FOM national physics conference in Veldhoven, Netherlands (January 2012)

- American Physical Society March Meeting in Dallas, Texas (March 2011)
  ⋯ Presented BAND code and NEGF Transport implementation on behalf of Scientific Computing and Modeling N.V.
- Physics@FOM national physics conference in Veldhoven, Netherlands (January 2011)
  ⋯ Contributed poster *"Ab-initio Calculations on Transport through 3-Terminal Single-Molecule Junctions"*

- FOM–86 Project workshop in Utrecht, Netherlands (November 2010)
  ⋯ Contributed talk *"To Trap a Thiol with NEGF"*
- SINGLE Project workshop in Mons, Belgium (August 2010)
  ⋯ Contributed talk *"Research Progress: NEGF Transport Code"*

- CECAM workshop on Transport Phenomena in Molecular Nanostructures in Zurich, Switzerland (June 2010)
  ··· Contributed poster *"Ab-Initio Transport through Single-Molecule Junctions"*
- Casimir Days conference of the Casimir Research School in Arnemuiden, Netherlands (June 2010)
  ··· Contributed poster *"Molecular Transport By Ab-Initio DFT+NEGF"*
- SINGLE Project workshop in Delft, Netherlands (March 2010)
- Physics@FOM national physics conference in Veldhoven, Netherlands (January 2010)
  ··· Contributed poster *"Ab-initio Calculations on Transport through 3-Terminal Single-Molecule Junctions"*
- International Conference on Molecular Electronics in Emmetten, Switzerland (January 2010)
  ··· Contributed poster *"Molecular Transport By Ab-Initio DFT+NEGF"*

- FOM–86 Project workshop in Utrecht, Netherlands (December 2009)
- New Computational Methods in Quantum Many-Body Theory workshop in Leiden, Netherlands (August 2009)
- FOM–86 Project workshop in Utrecht, Netherlands (June 2009)
- SINGLE Project conference in Zurich, Switzerland (March 2009)
- Physics@FOM national physics conference in Veldhoven, Netherlands (January 2009)
  ··· Contributed poster *"Ab-initio Calculations on Transport through Three-Terminal Single-Molecule Junctions"*

- FOM–86 Project workshop in Utrecht, Netherlands (October 2008)
- Casimir Days conference of the Casimir Research School in Heeg, Netherlands (May 2008)
  ··· Contributed poster *"Molecular Transport by ab-initio DFT + NEGF"*
- FOM–86 Project workshop in Utrecht, Netherlands (April 2008)
  ··· Contributed talk *"Computational Methods for Molecular Transport"*
- SINGLE Project conference and winterschool in Maria Alm, Austria (January 2008)
- Physics@FOM national physics conference in Veldhoven, Netherlands (January 2008)

TEACHING

COURSE	**International Course on Computational Physics (ICCP)** (Spring 2008, 2009, 2010)
LEVEL	Graduate, TU Delft & Michigan State University
DESCRIPTION	Instructed and coached a graduate-level course on computational physics with Dr. J.M. Thijssen (Delft), Prof. P.M. Duxbury (MSU), and Dr. E.S. McGarrity (MSU/Delft). Delft students were paired with Michigan State University partners to implement models for classical and quantum physics, during four consecutive team-based projects, two of which were long-distance collaborations. Problems were drawn from molecular dynamics simulations, Monte-Carlo methods for polymer growth and tight-binding models for electronic structure, among others.
COURSE	**Electronic Structure Lab** (Spring 2009)
LEVEL	Graduate, TU Delft
DESCRIPTION	Designed and taught a short graduate–level lab on electronic structure methods with J.S. Seldenthuis, Dr. J.M. Thijssen and Prof. H.S.J. van der Zant. Taught in two formats: as part of a MS-level course on Molecular Electronics, and as a more advanced PhD-level course, with a research focus. Students performed calculations on hydrogen and water, studied dissociation of H_2 using restricted & unrestricted Hartree-Fock, analyzed a benzene ring in comparison with tight-binding models, and considered symmetry in the geometry optimization of a water molecule.
COURSE	**Private Tutor** (1998 – 2007)
LEVEL	Secondary, Undergraduate & Graduate Courses
DESCRIPTION	Private tutor in mathematics, physics and mechanical– & aerospace–engineering courses.