



Tim Deutschmann

Dr. rer. nat. Physik

3rd May 2021

Personal Information

Date of birth	June 22 1979
Place of birth	Lübeck
Inhabited Cities	Heidelberg, Lübeck, Nürnberg.
Children	one son born in 2007
Profession	physicist (PhD)
longterm activity	<ul style="list-style-type: none">o atmospheric physics, spectroscopy, Monte Carlo radiative transfero socio-economics of positive and negative interest rates, monetary theory, system theoryo numerical simulation, forward and inverse modeling

Current Activity: non-profit voluntary social engagement, community service

2015–2021	research on the socio-economic physics of positive and negative interest rates and theory formation
Area	socio-economic physics , monetary system, system theory, sociocybernetics
Activity	Creating the website www.tim-deutschmann.de , creation of reports and articles with results, graphics and simulations, study of relevant literature (see below) , direct public relations work in conversation in the streets, in blog posts, on Facebook, on YouTube, by email and by phone.

Skills

Scientific skills and knowledge

Environmental physics	Physics and chemistry of the atmosphere, radiation transport, air chemistry, (differential) optical UV/vis/NIR absorption spectroscopy (DOAS), rotational Raman spectroscopy
Computer numerics	Numerical simulation of transport processes, ray tracing, Monte Carlo simulation, Markov-Chain-Monte-Carlo (MCMC), optimization

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Mathematical Physics	Maxwell equations, Fredholm integral equations 2nd type (e.g. Boltzmann equation, radiation transport equation, Black-Scholes model, ...), linear differential equations, probability theory and statistics, Monte Carlo integration, linearization of Monte Carlo forward models
Science and Science Theory	Analysis, theory and modeling, inverse modelling
Technology	Spectrometer construction and simulation, robotics
Computing	Sequential and parallel computing, processing of data sets and texts, automated measurement data processing
Non-academic (see below)	Knowledge from the fields of sociology, psychology, economics

Social and psychological qualities

Strong analytical skills, curious, team-oriented, communicative, **independent**, determined, persistent, resilient, stress-resistant and balancing.

Languages

German	mother tongue
English	fluent, business fluent
Spanish	fluent, everyday language
French	Communication is possible

Computer skills

high-level languages	C/C++ programming	since 1994	solid
	Java		similarly good as C++
	FORTRAN		basic knowledge
hardware languages	assembler	4 years	some experience
	VHDL	half a year	basic knowledge
	GPU: cuda & opencl	half a year	started, basic knowledge
scripting languages	octave / matlab , perl, bash	7 years	sure
	\LaTeX pstricks, paper styles, beamer, letter, book	since 2003	good
web languages	HTML , MathML, CSS, javascript, CGI	since 2013	sufficient
other languages	gnuplot, povray, lilypond	since 2002	good
MS-Office	Spreadsheet, Basic		some knowledge
Operating systems	Linux (Debian), Windows		

Work experience

Gainful employment during studies

- 2000–2001 **HiWi**, *Electronics*, Chair for Optics in Erlangen.
- 2002–2004 **HiWi**, *C/C++ programming: data extraction SCIAMACHY, GOME*, IUP Heidelberg (IUP).
- 2005–2006 **HiWi**, *C/C++ RTM TRACY-II*, IUP Heidelberg.
- 2007 **HiWi**, *TRACY-II*, Max Planck Institute for Chemistry Mainz.
- 2008 **Start of development of RTM McArtim 1.**
- 2008–2009 **HiWi**, *Supervision McArtim*, IUP Heidelberg.
- 2009–2014 **Scientific employee**, *Supervision of RTM McArtim*, IUP Heidelberg.
- 2010 **Publication of McArtim 2.**
- 2012 **Publication of McArtim 3.**
- 2006–2014 **Participation in the projects DFG-HALO, DFG HALO II, ERC Synergy, ENVIVAL, SOPRANE II, Halopole II, NASA Attrex, SHIVA, TACTS..**

Self-written software (among others)

TRACY II	Monte Carlo RTM	C/C++, 35k lines
McArtim	Monte Carlo RTM	C/C++, 60k lines
Inversion scripts	inverse modeling / optimization	matlab / octave, 2k lines
McSpec	Simulation software for UV / vis / NIR spectra	C/C++, 16k lines
Spectrometer -simulation	Object-oriented ray tracing software	C/C++, 17k lines
conversion program	HTML incl. MathML to LaTeX	C/C++, 3k lines
various scripts		bash and perl
www.tim- deutschmann.de	Website about the effect of the interest sign HTML, MathML, CSS, javascript	

Non-professional interests

- Music I've been playing **piano and keyboard** since I was 5 years old and bass and guitar for a few years. I'm interested in North and South American jazz: **Latin jazz, bebop and swing**
- Dancing **Salsa** is for me an expression of the joy of life.
- Swimming I'm a trained lifeguard and like to swim.
- Model making I build wooden models with my son.
- Robotics Electronics, motors and the connection with the computer.
- Philosophy and Religion Constructivism, Monotheism

education

school

- 1989-1. H.J. **grammar school**, *Johanneum*, Lübeck.
1997/98
2. H.J. 1997/98 **Gymnasium**, *IGH*, Heidelberg.
1. H.J. 1998/99 **grammar school**, *Johanneum*, Lübeck.
2. H.J. 1998/99 **Gymnasium**, *IGH*, Heidelberg.

basic studies

- 2001–2002 **Basic studies in physics**, *University of Erlangen-Nürnberg*, Erlangen.
2001 **HiWi in the quantum optics group**, *Chair for Optics*, University of Erlangen.
- 2002–2003 **Basic studies in physics**, *Ruprecht-Karls-Universität*, Heidelberg.

Diploma (comparable to Master)

- 2008 Elective subject examination environmental physics
2009 minor examination computer science and numerics
April 2009 **Diploma in Physics**, *Ruprecht-Karls-University*, Heidelberg.

Promotion

- 2010–2014 **PhD cand. Physics**, *University of Leipzig*, **McArtim 3**, Heidelberg.
Activity and Collaboration in the projects DFG-HALO, DFG HALO II, ERC Synergy, ENVI-
Involvement VAL, SOPRAN II, Halopole II, NASA Attrex, SHIVA, TACTS.
January 8th 2015 Disputation of the dissertation, doctorate for Dr. rer. nat., day of the awarding
January 26th, 2015.

Publications

Publications since 2015

- 2015–2021 **Essays on the analysis of capitalism and its logical counterpart**, various free internet publications at www.tim-deutschmann.de and www.tim-deutschmann.de/Aktuelles/index.html.
- 2019 **Supplementary material to the application from 14 K 7727/17 at the Administrative Court of Karlsruhe**, [free digital book](#). It concerns the complaint that it must be established that clarification of the mode of action of positive and negative money market interest rates according to Section 11 of the Interstate Broadcasting Treaty falls within the remit of the public service media. The process history can be found at www.tim-deutschmann.de/Einstieg/index.html.
- 2017 **A rough overview of the socio-economic transition from positive to negative money market rates**, [free digital book](#).

Publications up to PhD in early 2015

- 2014 **Dissertation**, *University of Leipzig*.
Title **On Modeling Elastic and Inelastic Polarized Radiation Transport in the Earth Atmosphere with Monte Carlo Methods**

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Reviewer Prof. Manfred Wendisch, Prof. Detlev Reiter, Prof. Ulrich Platt
 Supervisor Prof. Klaus Pfeilsticker, Prof. Thomas Wagner, Prof. Ulrich Platt
 Activity Extension of McArtim by elements of the Hessian matrix, vector radiation transport, rotation Raman ring effect and variance reduction for cloud calculations.
 April 2009 **Diploma thesis**, *University of Heidelberg*.
 Title **Atmospheric Radiative Transfer Modeling with Monte Carlo Methods**
 Supervisor Prof. Klaus Pfeilsticker, Prof. Thomas Wagner
 Activity Programming and validation of a linearized spherical-three-dimensional Monte Carlo radiation transport model (McArtim).

lectures

- January 8th 2015 Deutschmann, T., disputation lecture, **On Modeling Elastic and Inelastic Polarized Radiation Transport in the Earth Atmosphere with Monte Carlo Methods**, Seminar of the Meteorological Institute, University of Leipzig.
- 2013 Deutschmann, T., **On Linearization, Importance Sampling and Adaptive Variance Reduction Techniques Applied to Solutions of Fredholm Integral Equations in Atmospheric Optics**, Monte Carlo methods in natural sciences, engineering and economics, DESY Hamburg, February 19-21, 2013.
 Deutschmann, T., **On the application of the importance sampling technique in atmospheric radiation transport modeling**, Institute seminar, KFZ Jülich, January 22nd, 2013.
- 2012 Deutschmann, T., **Inversion using the Forward Model McArtim, Aerosol Optical Properties from Mie Theory and Metropolis-Hastings Retrieval of Tracegases and Aerosols**, Volkamer Group, University of Colorado, Boulder, September 4, 2012.
- 2002-2014 Deutschmann, T., various lectures in air chemistry at the IUP Heidelberg and in the satellite group at the MPI Chemie Mainz.

poster

- 2012 Deutschmann, T., Platt, U., **3D Sensitivity in Atmospheric Remote Sensing**, DPG Berlin, 2012.

publications in scientific journals

- 2012 Kern, C., Deutschmann, T., Werner, C., Sutton, A. J., Elias, T., and Kelly, P. J. **Improving the Accuracy of SO₂ Column Densities and Emission Rates Obtained from Upward- Looking UV-Spectroscopic Measurements of Volcanic Plumes by Taking Realistic Radiative Transfer into Account**. *Journal of Geophysical Research: Atmospheres*, 117 (D20), 2156-2202, 2012.
- 2011 Deutschmann, T., Beirle, S., Frieß, U., Grzegorski, M., Kern, C., Kritten, L., Platt, U., Prados-Román, C., Puķīte, J., Wagner, T., Werner, B., and Pfeilsticker, K.: **The Monte Carlo Atmospheric Radiative Transfer Model McArtim: Introduction and Validation of Jacobians and 3D Features**. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 112(6):1119 - 1137, 2011.

- Prados-Román, C., Butz, A., Deutschmann, T., Dorf, M., Kritten, L., Minikin, A., Platt, U., Schlager, H., Sihler, H., Theys, N., Van Roozendael, M., Wagner, T., and Pfeilsticker, K.: **Airborne DOAS limb measurements of tropospheric trace gas profiles: case studies on the profile retrieval of O₄ and BrO**, *Atmos. Meas. Tech.*, 4, 1241-1260, doi:10.5194/amt-4-1241-2011, 2011.
- 2010 Kritten, L., Butz, A., Dorf, M., Deutschmann, T., Kühl, S., Prados-Román, C., Puķīte, J., Rozanov, A., Schofield, R., Pfeilsticker, K.: **Time Dependent Profile Retrieval of UV/vis Absorbing Radicals from Balloon-Borne Limb Measurements - A Case Study on NO₂ and O₃**, *Atmos. Meas. Tech.*, 3, 933-946, 2010.
- Wagner, T., Beirle, S., Deutschmann, T., and Penning de Vries, M.: **A sensitivity analysis of Ring effect to aerosol properties and comparison to satellite observations**, *Atmos. Meas. Tech.*, 3, 1723-1751, doi:10.5194/amt-3-1723-2010, 2010.
- Puķīte, J., Kühl, S., Deutschmann, T., Dörner, S., Jöckel, P., Platt, U., and Wagner, T.: **The effect of horizontal gradients and spatial measurement resolution on the retrieval of global vertical NO₂ distributions from SCIAMACHY measurements in limb only mode**, *Atmos. Meas. Tech.*, 3, 1155-1174, doi:10.5194/amt-3-1155-2010, 2010.
- 2009 Puķīte, J., Kühl, S., Deutschmann, T., Platt, U., and Wagner, T.: **Extending differential optical absorption spectroscopy for limb measurements in the UV**, *Atmos. Meas. Tech.*, 3, 631-653, doi:10.5194/amt-3-631-2010, 2010.
- Wagner, T., Deutschmann, T., and Platt, U.: **Determination of aerosol properties from MAX-DOAS observations of the Ring effect**, *Atmos. Meas. Tech.*, 2, 495-512, doi:10.5194/amt-2-495-2009, 2009.
- Wagner, T., S. Beirle, and T. Deutschmann: **Three-dimensional simulation of the Ring effect in observations of scattered sun light using Monte Carlo radiative transfer models** *Atmos. Meas. Tech.*, 2, 113-124, 2009.
- 2008 Kühl, S., J. Puķīte, T. Deutschmann, U. Platt, and T. Wagner: **SCIAMACHY limb measurements of NO₂, BrO and OCIO. Retrieval of vertical profiles: Algorithm, first results, sensitivity and comparison studies**. *Advances in Space Research*, 42, Issue 10, 1747-1764 (2008).
- Li, X., T. Brauers, M. Shao, R. M. Garland, T. Wagner, T. Deutschmann, and A. Wahner: **MAX-DOAS measurements in southern China: 1. automated aerosol profile retrieval using oxygen dimers absorptions**. *Atmos. Chem. Phys. Discuss.*, 8, 17661-17690 (2008).
- Puķīte, J., S. Kühl, T. Deutschmann, U. Platt, and Wagner, T.: **Accounting for the effect of horizontal gradients in limb measurements of scattered sunlight**. *Atmos. Chem. Phys.*, 8, 3045-3060 (2008).

Wagner, T., S. Beirle, T. Deutschmann, E. Eigemeier, C. Frankenberg, M. Grzegorski, C. Liu, T. Marbach, U. Platt, and M. Penning de Vries: **Monitoring of atmospheric trace gases, clouds, aerosols and surface properties from UV/vis/NIR satellite instruments.** J. Opt. A: Pure Appl. Opt., 10 No 10, 104019 (9pp), doi: 10.1088/1464-4258/10/10/1040192008 (2008).

Wagner, T., S. Beirle, T. Deutschmann, M. Grzegorski, and U. Platt: **Dependence of cloud properties derived from spectrally resolved visible satellite observations on surface temperature.** Atmos. Chem. Phys., 8, 2299-2312 (2008).

2007 Wagner, T., S. Beirle, T. Deutschmann, M. Grzegorski, and U. Platt: **Satellite monitoring of different vegetation types by differential optical absorption spectroscopy (DOAS) in the red spectral range** Atmospheric Chemistry and Physics, Vol. 7, pp 69-79, 2007.

Wagner, T., J. P. Burrows, T. Deutschmann, B. Dix, C. von Friedeburg, U. Frieß, F. Hendrick, K.-P. Heue, H. Irie, H. Iwabuchi, Y. Kanaya, J. Keller, C. A. McLinden, H. Oetjen, E. Palazzi, A. Petritoli, U. Platt, O. Postylyakov, J. Pukite, A. Richter, M. van Roozendaal, A. Rozanov, V. Rozanov, R. Sinreich, S. Sanghavi, F. Wittrock **Comparison of Box-Air-Mass-Factors and Radiances for Multiple-Axis Differential Optical Absorption Spectroscopy (MAX-DOAS) Geometries calculated from different UV/visible Radiative Transfer Models** Atmos. Chem. Phys., 7, 1809-1833, 2007.

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