

Birth: January 26, 1950, in Kassel, Germany  
 Office Address: School of Mathematical Sciences and Information Technology,  
 Yachay Tech, Hda San José, Urcuquí, Imbabura Ecuador  
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**TERTIARY EDUCATION** (WS = Winter, SS = Summer semester)

WS 1968/69 and SS 1970 – SS 1971 Study of Mathematics and Physics at Technical University  
 Clausthal-Zellerfeld (interrupted by one year military service)  
 WS 1971 – SS 1972 Full-time engagement in university politics as president of students associa-  
 tion and member of the academic senate and several national committees  
 WS 1972/73, WS 1975/76 Continuation of studies in Mathematics, Physics, and Economics at the Uni-  
 versity of Freiburg  
 February 1976 “Diploma in Mathematics” with grade “Excellent”

**POSTGRADUATE STUDIES**

March 1976 – June 1980 Postgraduate Research for M.Sc. (Conferred April 1978) and Ph.D. (Con-  
 ferred April 1981) at Department of Computer Science, ANU, Canberra  
 Sept. 1980 – Dec. 1981 Postdoctoral Research with Prof. M.J.D. Powell supported by European  
 Science Exchange Program of DFG at DAMTP, Cambridge, England.

**POSITIONS**

1.1.1982 – 31.8.1986 Assistant Professor at Southern Methodist University (SMU), Dallas, Texas  
 1.9.1986 – 31.5.1987 Associate Professor at SMU (tenure granted in Spring 1987)  
 1.6.1987 – 31.7.1993 (Senior) Mathematician at the Mathematics and Computer Science Division,  
 Argonne National Laboratory (ANL), Argonne, Illinois  
 1.8.1993 – 14.8.1998 Professor and Director of the Institute of Scientific Computing,  
 Department of Mathematics, Technical University Dresden, Germany  
 15.8.1998 – 30.7.1999 Sabbatical year as researcher at INRIA Sophia Antipolis, Antibes, France  
 1.8.1999 – 30.7.2001 Professor at Institute of Scientific Computing, TUD  
 1.8.2001 – 20.10.2003 Director of Institute of Scientific Computing, TUD  
 21.10.2003 – 30.09.2015 Professor at Institute of Mathematics at Humboldt-Universität zu Berlin  
 1.08.2008 – 1.10.2012 Director of Institute of Mathematics at Humboldt-Universität zu Berlin  
 01.10.2015 – Dean of the School of Mathematical Sciences and Information Technology,  
 Yachay Tech, Urcuquí, Imbabura, Ecuador

**LANGUAGES**

German, English (bilingual), French (fluent), Spanish (fluent), Russian (basic)

**FORMER STUDENTS AND JUNIOR ASSOCIATES HOLDING PROFESSORSHIPS**

Uwe Naumann RWTH Aachen (2004)  
 Andrea Walther Universität Paderborn (2009)  
 Klaus Röbenack Technische Universität Dresden (2009)  
 Nicolas Gauger RWTH Aachen (2010) and TU Kaiserslautern (2014)  
 Dagmar Monett Diaz Hochschule für Wirtschaft und Recht Berlin (2010)  
 Levis Eneya Chancellor College Zomba Malawi (2011)

**SUPERVISED DOCTORAL THESES (last 5 years)**

Sebastian Walter	Structured Higher-Order Algorithmic Differentiation in the Forward and Reverse Mode within Applications in Optimum Experimental Design	2011
Amr Radwan	Utilization of Parametric Programming and Evolutionary Computing in Optimal Control	2012
Suleiman Abdallah	Development of a Nonlinear Equations Solver with Superlinear Convergence to Regular Singularities	2014
Torsten Bosse	Large Scale Optimization From Black-Box to Gray-Box Solver	2014
Emre Özkaya	One-Shot Method for Aerodynamic Shape Optimizatin	2014
Meera Arab	Chemical Vapor Decomposition Modeling, Simulation and Optimization	2014
Hernan Löovey	Derivative Based QuasiMonteCarlo Constructions and Sensitivity Estimates	2015
Nikolai Strogies	Optimization of Nonsmooth First Order Hyperbolic Systems	2015

(Total 23, see <http://genealogy.math.ndsu.nodak.edu>)

**THIRD PARTY FUNDED PROJECTS**

2003-2010	Linearly Invariant Algorithm for Large-Scale Nonlinear Programming	Matheon
2004-2006	Speichereffiziente Verfahren für Probleme der Optimalen Steuerung	DFG
2007	Design to Cost - Car body structure optimization	VW
2005-2009	GRK 1128: Analysis, Numerics and Optimization of Multiphase Problems	DFG
2007-2010	NOVOEXP: Numerische Optimierungsverfahren zur Parameterschätzung	BMBF
2007-2011	MetallBip: Nanobeschichtete, metallische Bipolarplatte für PEFC	BMBF
2008-2009	Automated extension of fixed point PDE solvers for optimal design with bounded retardation	DFG
2009-2013	Optimal design with bounded retardation for problems with non-separable adjoints	DFG
2010-2013	Open pit mine planning via a continuous optimization approach	DFG
2014-2017	Application of Quasi Monte Carlo methods in quantum field theory	DFG

**MEMBERSHIP IN SCIENTIFIC COMMITTEES**

2002-2008	Fachausschuss Mathematik der Akkreditierungsagentur ASIIN
2005-2011	DFG Fachkollegium Mathematik (National Review Panel)
2007- 2015	GAMM Vorstandsrat
2012-2014	SIAM News Editorial Board
2002-	Colloque Africain de Recherche en Informatique et Mathématique Appliquée
2013-	SIAM Council and two committees, SIAM Board 2015/2016
2014-	Member of IMU Circle

**LEADERSHIP IN COLLABORATIVE RESEARCH PROJECTS**

1995-2001	Spokesman of DFG Research Group <i>Identification and Optimization of Complex Models on the Basis of Analytical Sensitivity Calculations</i> (TU Dresden)
2004-2009	Spokesman Research Training Group (GRK 1128)

**MEMBERSHIP IN ORGANIZING AND PROGRAM COMMITTEES**

2004	GAMM Annual Meeting Dresden, (Co-Chair)
2006	DMV/GDM Annual Meeting Berlin
2007/2008	Chair Roundtable ICIAM Zurich, ECM5 Amsterdam, ECM6 Krakau
2012	International Symposium on Mathematical Programming at Berlin
2012/2016	Co-Organizers of Oberwolfach workshops on Data Assimilation
2016	7. International Conference on Algorithmic Differentiation at Oxford
2017	CIMPA School on Algorithmic Nonsmooth Optimization at Yachay Tech

**Books**

1. A. Griewank and G. Corliss, editors. *Automatic Differentiation of Algorithms: Theory, Implementation, and Applications*. SIAM, Philadelphia, Penn. (1991).
2. M. Berz, Ch. Bischof, G. Corliss, and A. Griewank, editors. *Computational Differentiation - Techniques, Applications, and Tools*. SIAM, Philadelphia, Penn. (1996).
3. A. Griewank. *Evaluating Derivatives, Principles and Techniques of Algorithmic Differentiation*. Number 19 in Frontiers in Appl. Math. SIAM, Philadelphia, 2000, second edition 2008 with Andrea Walther.
4. G.F. Corliss, C. Faure, A. Griewank, L. Hascoët, and U. Naumann, editors. *Automatic Differentiation: from Simulation to Optimization*. Springer Verlag, New York (2001).
5. Constrained Optimization and Optimal Control for Partial Differential Equations. A. Griewank M. Hinze R. Rannacher V. Schulz M. Ulbrich St. Ulbrich G. Leugering, S. Engell, editor, *International Series of Numerical Mathematics*, pages 99–122. Springer, Basel Dordrecht Heidelberg London New York (2012).
6. Trends in PDE Constrained Optimization. G. Leugering, P. Benner, S. Engell, A. Griewank, H. Harbrecht, M. Hinze, R. Rannacher, St. Ulbrich, Eds. *Applied Mathematics and and Computer Science*, Birkhäuser, Springer Basel AG (2014).
7. Numerical Methods for Nonsmooth Problems. A. Griewank, A. Walther, T. Bosse. *Book Series on Industrial Mathematics*. SIAM 2017 in preparation

**Selected Articles in Journals and Books**

1. A. Griewank. Starlike Domains of Convergence for Newton's Method at Singularities. *Numerische Mathematik*, 35:95–111 (1980).
2. A. Griewank. Generalized Descent for Global Optimization. *Journal of Optimization Theory and Applications*, 34:11–39 (1981).
3. A. Griewank and Ph.L. Toint. Partitioned Variable Metric Updates for Large Structured Optimization Problems. *Numerische Mathematik*, 39:119–137 (1982).
4. A. Griewank. On Solving Nonlinear Equations with Simple Singularities or Nearly Singular Solutions. *SIAM Review*, 27:537–563 (1985).
5. A. Griewank. The 'Global' Convergence of Broyden-like Methods with a Suitable Line Search. *Austr. Math. Soc. Ser. B.*, 28:75–92 (1986).
6. A. Griewank. The Local Convergence of Broyden's Method on Lipschitzian Problems in Hilbert Spaces. *SIAM Journal of Numerical Analysis*, 24:684–705 (1987).
7. A. Griewank. On Automatic Differentiation. In *Mathematical Programming: Recent Developments and Applications*, pages 83–108, Amsterdam, Kluwer Academic Publishers (1989).
8. A. Griewank and P. Rabier. On the Smoothness of Convex Envelopes. *Transactions of the American Mathematical Society*, 332:691–709 (1990).
9. A. Griewank. The Global Convergence of Partitioned BFGS. *Mathematical Programming*, 50:141–175 (1991).
10. J.D.F. Cosgrove, J.C. Diaz, and A. Griewank. Approximate inverse preconditionings for sparse linear systems *International Journal of Computer Mathematics*, 44,91-110 (1992).
11. A. Griewank. Achieving Logarithmic Growth of Temporal and Spatial Complexity in Reverse Automatic Differentiation. *Optimization Methods and Software*, 1(1):35–54 (1992).

12. P. Rabier and A. Griewank. Generic Aspects of Convexification with Applications to Thermodynamic Equilibrium. *Archive for Rational Mechanics*, 118:349–397 (1992).
13. A. Griewank, C.H. Bischof, G.F. Corliss, A. Carle, and K. Williamson. Derivative Convergence of Iterative Equation Solvers. *Optimization Methods and Software*, 2:321–355 (1993).
14. A. Griewank. Automatic Directional Differentiation of Nonsmooth Composite Functions. In R. Durier, editor, *Recent developments in Optimization / Seventh French-German Conference on Optimization, Dijon 1994*, pages 155–169. Springer Verlag (1995).
15. A. Griewank. ODE solving via automatic differentiation and rational prediction, *Pitman Research Notes in Mathematics Series*, pages 36–56 (1996).
16. A. Griewank. A mathematical view of automatic differentiation. *Acta Numerica*, 12:321–398 (2003).
17. A. Griewank, S. Schlenkrich, and A. Walther. A quasi-Newton method with optimal R-order without independence assumption. *Optimization Methods and Software*, 23(2):215–225 (2008).
18. T. Bosse, L. Lehmann, and A. Griewank. Adaptive sequencing of primal, dual, and design steps in simulation based optimization. *Computational Optimization and Applications*, pages 1–30 (2013).
19. A. Griewank. On Stable Piecewise Linearization and Generalized Differentiation. *Optimization Methods and Software*, 28(6):1139–1178 (2013).
20. P. Boeck, B. Gompil, A. Griewank, R. Hasenfelder, and N. Strogies. *Experiments with generalized midpoint and trapezoidal rules on two nonsmooth ODE's*, Mong. Math. J., 17:39–49 (2013).
21. K. Jansen, H. Leövey, A. Nube, A. Griewank, and M. Müller-Preussker. A first look at quasi-Monte Carlo for lattice field theory problems. *J. Phys. Conf. Ser.*, 454:012043 (2013).
22. A. Griewank, L. Lehmann, H. Leövey, and M. Zilberman. Automatic evaluations of cross-derivatives. *Mathematics of Computation*, 83:251–274 (2014).
23. A. Griewank, J. Fischer, and T. Bosse. Cubic overestimation and secant updating for unconstrained optimization of  $C^{2,1}$  functions. *Optimization Methods and Software*, 29(5):1075–1089 (2014).
24. A. Griewank, J.-U. Bernt, M. Radons, and T. Streubel. Solving piecewise linear equations in abnormal form. *Linear Algebra and its Application*, 471:500–530 (2015).
25. A. Griewank, A. Walther, S. Fiege, and T. Bosse. On Lipschitz optimization based on gray-box piecewise linearization. *Mathematical Programming, Series A* 158(1):383–415 (2016).
26. A. Griewank, A. Walther. First and second order optimality conditions for piecewise smooth objective functions. *Optimization Methods and Software*, 31(5):904–930 (2016).

## Software

1. C.H. Bischof, A. Carle, G.F. Corliss, and A. Griewank. ADIFOR: Fortran source translation for efficient derivatives. In P. Wang, editor, *International Symposium on Symbolic and Algebraic Computing '92*, 294–302, Baltimore, MD, ACM Press (1992).
2. A. Griewank, D. Juedes, and J. Utke. ADOL-C: A package for the automatic differentiation of algorithm written in C/C++. *ACM Transactions on Mathematical Software*, 22(2):131–167 (1996).
3. A. Griewank and A. Walther. Revolve: An Implementation of Checkpointing for the Reverse or Adjoint Mode of Computational Differentiation. *Transaction on Mathematical Software*, 26(1) (2000).