

Curriculum Vitae

Univ.Ass. Dipl.-Ing. Mag. Dr. Reinhold Kainhofer

1 Personal Data

Name: Reinhold Franz Kainhofer
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Address: Eslarngasse 18/7, A-1030 Vienna, Austria
Born: October 8, 1977, in Salzburg
Parents: OSR Franz (Head master) and Maria Kainhofer (Teacher)
Citizenship: Austria

2 Current Position

Assistant Professor ("Universitätsassistent")
Vienna University of Technology
Department for Mathematical Methods in Economics
Research Group "Financial- and Actuarial Mathematics" (FAM)
Wiedner Hauptstrasse 8-10/105-1, A-1040 Vienna, Austria
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3 Education

1984 - 1988 Primary school in Voglau near Abtenau
1988 - 1996 Grammar school Borromäum in Salzburg (humanistic branch)
-) Special award at the 5. EURISY Youth Forum in Noordwijk/NL (ESA)
-) Lecture series "Faint Galaxies and Distant Stars" on Astronomy
-) Regional champion in orienteering (team competition)
-) Regional champion of the Latin Olympics (twice), 3rd prize of the national competition
-) 2nd Prize of the Austrian Youth Programming Competition
-) Thesis in Physics for the final exams awarded as 2nd best in Austria 1996
Final exam passed on June 14, 1996, with distinction
1996 - 2000 *Studies of Technical Mathematics* (Branch Technomathematics)
at the Graz University of Technology
Second diploma exam passed on October 18, 2000, with distinction
Topic of the masters thesis: The numerical simulation of transport
equations using quasi-Monte Carlo methods
1996 - 2003 *Studies of Theoretical Physics* at the Karl-Franzens University Graz,
Second diploma exam passed on January 23, 2003, with distinction
Topic of the masters thesis: Goldstone-Bosonen Exchange chiral
Constituent Quark Model of Baryons.
Fall 1999 Studies at the Virginia Polytechnic Institute in Blacksburg / VA, USA
2000 - 2004 *Studies of Law* at the Karl-Franzens University Graz
First part finished March 2003

2004 - ... *Studies of Law* at the University of Vienna
 2000 - 2003 *PhD. Dissertation* on "Quasi-Monte Carlo Algorithms with Applications in Numerical Analysis and Finance"
 Advisor: O. Univ.-Prof. Dr. Robert F. Tichy
 Defense on May 16, 2003, with distinction
 "Promotio sub auspiciis praesidentis rei publicae" on January 20, 2004

4 Professional Experience

1998 - 2000 Programmer (part time) at Wolfram Research Europe Lim., the creators of Mathematica
 Summer 1998: Summer Internship at Wolfram Research in Champaign-Urbana, IL, USA
 1999 - 2003 Programmer and Partner, Deltasoftware KEG (<http://www.deltasoftware.at/>)
 Creation of Mathematics-Software for teaching in high school, EDV-Courses on Mathematica (FH Munich, DIZ Bavaria, ...)
 WS 1998 / 99 Tutor for "Mathematics I" at the Department of Mathematics B, TU Graz
 WS 2000 / 01 Tutor for the Exercises of Linear Algebra
 2000 - 2003 Tutor for various courses at the Department of Mathematics A, TU Graz
 2000 - 2004 Research assistant in the FWF Project S-8308-MAT on Quasi-Monte Carlo methods in financial and actuarial mathematics, and on number-theoretic algorithms (Prof. Tichy, TU Graz)
 2000 - 2004 Network administrator at the Dep. of Math. (A and C), TU Graz
 Administrator of the Linux network (~ 35 Debian GNU/Linux computers)
 2002 - ... Software developer for the KDE project for Linux:
 -) KOrganizer (Calendaring application for KDE): Lead developer
 -) KPilot (Synchronizing PalmOS handhelds with KDE)
 2003/04: University assistant at the Dept. of Mathematics C, TU Graz (Prof. Woess)
 2004 - ... Assistant professor at the "Institute for Math. Methods in Economics", Research group "Financial and Actuarial Mathematics", Vienna University of Technology (Profs. Schmock and Schachermayer)

5 Courses

WS 2000/01: Exercises Linear Algebra 1 (Prof. Berglez)
 SS 2001: Ex Financial and Actuarial Mathematics 1 (Prof. Tichy)
 SS 2001: Ex Differential Equations 1 (Prof. Berglez)
 WS 2001/02: Ex Mathematics 1/1, Group 1 (Prof. Berglez)
 SS 2002: Ex Probability Theory and Statistics for mechanical engineers (Prof. Grabner / Müller), computer exercises with SPSS
 WS 2002/03: Substitute for the lecture "Mathematics 1 for ME" (Prof. Tichy)
 SS 2003: Ex Probability Theory and Statistics for ME (Prof. Tichy / Müller), computer exercises with SPSS
 SS 2003: Ex Mathematics 2 for civil engineers (Prof. Ganster / Tichy)
 WS 2003/04: Ex Mathematics 1 for electrical engineers (Prof. Burkard / Woess)
 SS 2004: Ex Selected Chapters of Higher Life-Insurance Mathematics (Prof. Schmock)
 WS 2004/05: Asset Pricing (with Prof. Schmock)
 WS 2004/05: Exercises Life Insurance Mathematics
 WS 2004/05: Exercises Life and health insurance mathematics
 WS 2004/05: Seminar Actuarial Mathematics (with Bachelor thesis)
 WS 2004/05: Seminar Actuarial Mathematics (for Master students)
 SS 2005: Advanced Derivatives (with Prof. Schmock)
 SS 2005: Introduction to Financial Mathematics: Discrete Models (with J. Leitner)

- SS 2005: Higher Life Insurance Mathematics (with Prof. Schmock)
- WS 2005/06: Term Structure and Credit Risk Models (with Prof. Schmock)
- WS 2005/06: Exercises Life Insurance Mathematics
- WS 2005/06: Exercises Life and health insurance mathematics
- WS 2005/06: Seminar Actuarial Mathematics (with Bachelor thesis)
- WS 2005/06: Seminar Actuarial Mathematics (for Master students)

6 Scientific Publications

6.1 Mathematics

1. H. Albrecher and R. Kainhofer. Risk Theory with a Nonlinear Dividend Barrier. *Computing*, 68:289–311, 2002
2. H. Albrecher, R. Kainhofer, and R. Tichy. Simulation methods in ruin models with non-linear dividend barriers. *Math. Comput. Simulation*, 62:277–287, 2003
3. H. Albrecher, R. Kainhofer, and R. Tichy. Efficient simulation techniques for a generalized ruin model. *Grazer Math. Ber.*, 345:79–110, 2002
4. R. Kainhofer. QMC methods for the solution of delay differential equations. *J. Comp. Appl. Math.*, 155(2):239 – 252, 2003
5. R. Kainhofer and R. Tichy. QMC methods for the solution of differential equations with multiple delayed arguments. *Grazer Math. Ber.*, 345:111–129, 2002
6. R. Kainhofer and R. Tichy. QMC methods for the solution of delay differential equations. *Proc. Appl. Math. Mech., Proceedings of the GAMM meeting 2002*, 2:503–504, 2003
7. J. Hartinger, R. Kainhofer, and R. Tichy. Quasi-Monte Carlo algorithms for unbounded, weighted integration problems. *Journal of Complexity*, 20:654–668, 2004
8. J. Hartinger and R. Kainhofer. Non-uniform low-discrepancy sequence generation and integration of singular integrands. 2005. Accepted
9. J. Hartinger, R. Kainhofer, and V. Ziegler. On the minimum hyperbolic distance of low-discrepancy sequences to the corners. *Integers - Electronic Journal of Combinatorial Number Theory*, 2005. Accepted

6.2 Physics

1. K. Glantschnig, R. Kainhofer, W. Plessas, B. Sengl, and R. F. Wagenbrunn. Extended Goldstone-Boson-Exchange Constituent Quark Model. *The European Physical Journal A*, 23(3):507–515, 2005. nucl-th/0408068

6.3 Computer Science, Didactics, etc.

1. B. K. Aichernig and R. Kainhofer. Modeling and validating hybrid systems using VDM and Mathematica. In *Lfm2000, the Fifth NASA Langley Formal Methods Workshop, Williamsburg, Virginia, June 2000*, 2000
2. R. Kainhofer and R. Simonovits. M@th Desktop and MD Tools - Mathematics and Mathematica Made Easy for Students. Proceedings of the PrimMath [2003] conference, 2004
3. R. Kainhofer. The CSSSave Package - Extending the built-in HTMLSave function with style sheets. Proceedings of the PrimMath [2003] conference, 2004

6.4 Academic Theses

1. R. Kainhofer. Moderne Beschleuniger- und Detektortechnik am Beispiel des Deutschen Elektronen-Synchrotrons. Fachbereichsarbeit, Borromäum, Salzburg, Feb. 1996
2. R. Kainhofer. Die numerische Simulation von Transportgleichungen mittels Quasi-Monte Carlo Methoden. Diploma Thesis in Technical Mathematics, TU Graz, Aug. 2000
3. R. Kainhofer. Exploration of different confinement and hyperfine interactions in a constituent quark model for baryons. Diploma Thesis in Theoretical Physics, Karl-Franzens Universität Graz, Graz, Jan. 2003
4. R. Kainhofer. *Quasi-Monte Carlo Algorithms with Applications in Numerical Analysis and Finance*. PhD. Dissertation in Technical Mathematics, TU Graz, Apr. 2003

7 Talks

7.1 Scientific Talks

1. R. Kainhofer. Goldstone Bosonen Austausch (GBE) chirales Konstituentenquark-Modell. 32. Summer school for high energy physics, Maria Laach, Germany, Sept. 2000
2. R. Kainhofer. Quasi-Monte Carlo Runge Kutta methods for delay differential equations. GAMM 2002, Augsburg, Germany, Mar. 26, 2002
3. R. Kainhofer. Quasi-randomized schemes for the solution of retarded differential equations. Dagstuhl Seminar 2401 “Algorithms and Complexity for Continuous Problems”, Schloss Dagstuhl, Germany, Sept. 2002
4. R. Kainhofer. Hlawka-Mück techniques for option pricing - Quasi-Monte Carlo methods with NIG distribution. MCQMC 2002, Singapore, Nov. 25, 2002
5. R. Kainhofer. Numerical solution of delayed differential equations using QMC methods. Quasi-randomized schemes for heavily varying equations. FSP Workshop, Linz, Austria, Feb. 2003
6. R. Kainhofer. Quasi-Monte Carlo Algorithms with applications in numerical analysis and finance. Rigorosumsvortrag, Inst. f. Mathematik, TU Graz, Austria, May 16, 2003
7. R. Kainhofer. Transformation methods for the creation of non-uniformly distributed low-discrepancy sequences. MCM2003, Berlin, Germany, Sept. 17, 2003
8. R. Kainhofer. The CSSSave' package for Mathematica - Extending the built-in HTMLSave function with (cascading) style sheets. PrimMath[2003], Zagreb, Croatia, Sept. 26, 2003
9. R. Kainhofer. M@th Desktop and MD Tools - Mathematics and Mathematica made easy for students. PrimMath[2003], Zagreb, Croatia, Sept. 26, 2003
10. R. Kainhofer. Entwicklung sublinearer Dividendenmodelle und deren numerische Behandlung. FAM, TU Wien, Austria, Nov. 13 2003
11. R. Kainhofer. QMC integration of improper integrals. An overview with non-uniform sequences in mind. MC²QMC 2004, Juan-les-Pins, France, June 7, 2004
12. R. Kainhofer. Zur Erstellung der neuen Österreichischen Rententafel AVÖ 2005R – Vorläufiger Stand der Arbeitsgruppe. FAM, Vienna University of Technology, Austria, Feb. 17 2005
13. R. Kainhofer. Rohentwurf der neuen Österreichischen Rententafel AVÖ 2005R – Vorläufiger Stand der Arbeitsgruppe. Aktuarvereinigung Österreichs (Actuarial Association of Austria), Vienna, Austria, Mar. 3, 2005
14. R. Kainhofer. Die neue Österreichische Rententafel AVÖ 2005R – Endresultat der Arbeitsgruppe der AVÖ. Versicherungsverband Österreichs (Austrian Association of Insurance Companies), Vienna, Austria, Apr. 26, 2005
15. R. Kainhofer. Die Rentenversicherungssterbetafel AVÖ 2005R. General Assembly of the Actuarial Association of Austria, Vienna, Austria, May 12, 2005

16. R. Kainhofer. Quasi-Monte Carlo Methoden – Am Schnittpunkt von numerischer Analysis, Zahlentheorie und Finanzmathematik. Vortragsreihe “Wissenswertes aus der Mathematik”, Vienna University of Technology, Austria, June 20, 2005

7.2 Popular Scientific Talks

1. R. Kainhofer, M. Lacher, T. Triffterer, and A. Soucek. Beyond the horizon: The history of satellites. 5th Int. EURISY youth forum, Bristol, UK, Nov. 1996
2. R. Kainhofer. Lebensräume - Lebensträume. Ein Streifzug durch die Grundlagen der Finanz- und Versicherungsmathematik. Studienförderungstiftung Pro Scientia, Wien, Austria, May 19, 2004

7.3 Software Training Courses

1. R. Kainhofer. Advanced Mathematica Programming. FH München, Germany, Sept. 25–27 2002
2. R. Kainhofer. Mathematica Basics. FH München, Germany, Mar. 17-19 2003

7.4 Other Talks

1. R. Kainhofer. The Free Software Revolution – Open Source und die Bedeutung von Free. Pro Scientia, Graz, Austria, June 11, 2002
2. R. Kainhofer. Impulsreferat zum Doktorasstudium in Österreich. Konferenz “Das Doktoratsstudium in Österreich. Nationale Positionierung im Kontext europäischer Entwicklungen”, Vienna, Austria, Nov. 12, 2004
3. R. Kainhofer. Open Source Groupware Systeme – KDE’s Kontact: One Client to Rule Them All. Linux Business Tag, Kapfenberg, Austria, May 13, 2005

8 Scientific Projects and Grants

1. Generation of the Austrian Annuity Valuation Table AVÖ 2005R on behalf of the Austrian Actuarial Society (AVÖ) and the Austrian Association of Insurance Companies (VVÖ). 2004-2005.
2. Research Grant P-18022 of the Austrian Science Foundation (FWF): “Robust Calibration of Jump-Type Asset Price Models”

9 Grants and Awards

-) “Leistungsstipendium” of the Karl-Franzens University Graz (1999)
-) “Leistungsstipendium” of the Graz University of Technology (1999)
-) Member of PRO SCIENTIA (2002, 2003, 2004)
-) “Förderungsstipendium” of the Graz University of Technology (2003)
-) “Würdigungspreis” of the Austrian Ministry of Education, Science and Culture (2003)
-) Research Grant P-18022 of the Austrian Science Foundation FWF (2005)

10 Memberships

10.1 Scientific and Professional Memberships

-) Austrian Mathematical Society (ÖMG)
-) Austrian Actuarial Society (AVÖ)
-) KDE e.V

10.2 Non-Scientific

-) Chorvereinigung Jung-Wien
-) American Football Referees of Austria (AFSÖ)
-) Alumni-Association of the Graz University of Technology
-) Alumni-Association of the Karl-Franzens-University Graz
-) Alumni-Association of the Borromäum

11 Others

-) Referee for American Football
-) Webmaster (Homepage of the department, PRO SCIENTIA, Chorvereinigung Jung-Wien, Otto-Mauer Fonds, ...)
-) Programming
-) Choir Association Jung-Wien

11.1 In the Past

-) Old Scripts (<http://fonts.kainhofer.com>)
-) Trampoline
-) Volunteer in the "Haus Elisabeth" of the Caritas (for troubled women)