

# CURRICULUM VITAE

## Personal Data

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## Education

- 1996 – 1997 Ph.D. in Mathematics (with excellence), University of Salzburg.
- 1992 – 1995 M.Sc. in Mathematics (with excellence), University of Salzburg.
- 1988 – 1992 Studies of Computer Science, University of Salzburg.

## Professional Experience

- 2006 – Associate Professor of Statistics, Department of Statistics, Yale University.
- 2003 – 2006 Assistant Professor of Statistics, Department of Statistics, Yale University.
- 2002 – 2003 Visiting scholar (Max Kade Fellowship) at Yale University, Department of Statistics.
- 2000 – 2002 Post-doc, Department of Statistics, University of Vienna. Funded by FWF grant P13868-MAT; principal investigator: B.M. Pötscher; research on model selection and statistical inference.
- 1998 – 2000 Temporary Assistant Professor, Department of Statistics, University of Vienna (replacement of E. Reschenhofer during his leave of absence).

## Professional Experience (continued)

- 1994 – 1998 Research Assistant, Department of Mathematics, University of Salzburg. Funded by FWF grants P11143-MAT and P11143-TEC; principal investigator: P. Hellekalek; research on pseudorandom number generation.
- 1997 – 1999 Part-time Research Assistant, Department of Mineralogy, University of Salzburg. Funded by FWF grant P11727-GEO; principal investigator: W. Lottermoser; research on crystallographic x-ray diffraction.
- 1997 – 1998 Consultant for modeling and simulation for A. Lametschandtner’s research on SEM morphometry and quantification of microstructures at the Department of Zoology, University of Salzburg.
- 1986 – 1992 Programmer and System Manager at Salzburger Hochgeschwindigkeitsrechner Ges.m.b.H., at GeoSpace Satellite Image Products, at Geoconsult Consulting Engineers, and at the county’s main newspaper Salzburger Nachrichten.

## Funding

- NIH T32 predoctoral training grant; revision submitted.
- NIH R1 research grant, 2008-2013.
- Yale University startup grant (2003); \$ 38,000,-.
- Max Kade Fellowship for a one-year research visit to the US (2002); \$ 42,000,-.

## Awards & Honors

- 2007: Austrian Academy of Science’s Figdor Award (joint with Alexander Bogner).
- 2005: Offer of tenured Assistant Professor position at University of Exeter, Department of Economics.
- 1995: Student Promotion Award of the Department of Mathematics, University of Salzburg.

## Teaching

- Yale University: Probability Theory with Applications; Theory of Statistics; Statistical Inference; Data Mining & Machine Learning; Linear Models; Introductory Data Analysis; Random Matrices in Statistics.
- University of Vienna: Nonlinear Regression, Classification, and Machine Learning (lecture and lab-session); Econometrics I (lab-session); Econometrics II (lecture and lab-session); Calculus of Probability (lab-session); Mathematics for Economists (lab-session).
- University of Salzburg: Calculus II; Finite Fields; Measure Theory; Mathematical Methods; Mathematical Software (all lab-sessions).
- Fachhochschule für Telekommunikationstechnik und -systeme, Salzburg: Programming in C++ (lab-session); Unix System Programming with PERL (lecture and lab-session).

## Research Interests

Inference Post Model Selection; Model Selection in Statistics and Econometrics; Asymptotic Statistics; Analysis of High-Dimensional Data; Random Matrices; Shrinkage-Type Estimators; Linear and Non-Linear Time Series Analysis; Machine Learning.

## Current Research

- Model selection and predictive inference when the number of parameters is of the same order as sample size.
- Pitfalls in inference after model selection when using traditional approaches.

## Publications

Recent papers and preprints are available for download at <http://www.stat.yale.edu/~h1284/>.

## Refereed Publications

- [1] Conditional predictive inference after model selection. *Ann. Statist.*, forthcoming.
- [2] Evaluation and selection of models for out-of-sample prediction when the sample size is small relative to the complexity of the data-generating process. *Bernoulli*, **14**:661–690, 2008.
- [3] Model Selection. (With B.M. Pötscher.) In T.G. Andersen et al., editors, *Handbook of Financial Time Series*, Springer, 785–821, 2008.
- [4] Can one estimate the unconditional distribution of post-model-selection estimators? (With B.M. Pötscher.) *Econometric Theory*, **24**:338–367, 2008.
- [5] Sparse estimators and the oracle property, or the return of Hodge’s estimator. (With B.M. Pötscher.) *Journal of Econometrics*, **142**:201–211, 2008.
- [6] Can one estimate the conditional distribution of post-model-selection estimators? (With B.M. Pötscher.) *Ann. Statist.*, **34**:2554–2591, 2006.
- [7] On the large-sample minimal coverage probability of confidence intervals after model selection. (With P. Kabaila.) *J. Amer. Statist. Assoc.*, **101**: 619–629, 2006.
- [8] The distribution of a linear predictor after model selection: Unconditional finite-sample distributions and asymptotic approximations. *IMS Lecture Notes – Monograph Series*, **49**: 291–311, 2006.
- [9] Performance limits for estimators of the risk or distribution of shrinkage-type estimators, and some general lower risk-bound results. (With B.M. Pötscher.) *Econometric Theory*, **22**:69–97, 2006.
- [10] The distribution of a linear predictor after model selection: Conditional finite-sample distributions and asymptotic approximations. *Journal of Statistical Planning and Inference*, **134**:64–89, 2005.
- [11] Model selection and inference: Facts and fiction. (With B.M. Pötscher.) *Econometric Theory*, **21**:21–59, 2005.
- [12] The finite-sample distribution of post-model-selection estimators, and uniform versus non-uniform approximations. (With B.M. Pötscher.) *Econometric Theory*, **19**:100–142, 2003.
- [13] On a differential equation with both advanced and retarded arguments. *Communications in Applied Nonlinear Analysis*, **9**:77–86, 2002.
- [14] Asymptotic properties of the spectral test, diaphony and related quantities. *Math. Comp.*, **71**:297–309, 2002.

- [15] Corrigenda to “New primitive  $t$ -nomials ( $t = 3, 5$ ) over  $GF(2)$  whose degree is a Mersenne exponent,” and some new primitive pentanomials. (With T. Kumada, Y. Kurita, and M. Matsumoto.) *Math. Comp.*, **71**:1337–1338, 2002.
- [16] The variance of an integrated process need not diverge to infinity and related results on partial sums of stationary processes. (With B.M. Pötscher.) *Econometric Theory*, **17**:671–685, 2001.
- [17] Quantification of microvascular networks by SEM of corrosion castings and 3D-morphometry. (With B. Minnich, H. Bartel, E.W.N. Bernroider, W.D. Krautgartner, and A. Lametschwandtner.) *Microscopy and Analysis*, **71**:13–15, 2001.
- [18] New primitive  $t$ -nomials ( $t = 3, 5$ ) over  $GF(2)$  whose degree is a Mersenne exponent. (With T. Kumada, Y. Kurita and M. Matsumoto.) *Math. Comp.*, **69**:811–814, 1999.
- [19] A technique for accurate dimensional and angular measurements of microstructures using stereopaired digitized images and digital image analysis. (With B. Minnich, E.W.N. Bernroider and A. Lametschwandtner.) *J. Microscopy*, **195**:23–33, 1999.
- [20] Higher-dimensional properties of non-uniform pseudo-random variates. (With J. Leydold and W. Hörmann.) *Monte Carlo and Quasi-Monte Carlo Methods 1998*, H. Niederreiter and J. Spanier (eds.), pages 341–355, Springer, Berlin, 1999.
- [21] Neue Darstellungs- und Analysemöglichkeiten von 3D-Elektronendichten. (With K. Steiner, W. Lottermoser, and G. Amthauer.) In *Proceedings of the 6. Jahrestagung der Deutschen Gesellschaft für Kristallographie (DGK), March 2–5, 1998, University of Karlsruhe*, page 201, Oldenbourg Verlag, Germany, 1998.
- [22] Dyadic diaphony. (With P. Hellekalek.) *Acta Arith.*, **80**:187–196, 1997.
- [23] Inversive and linear congruential pseudorandom number generators in empirical tests. (With S. Wegenkittl.) *ACM TOMACS*, **7**:272–286, 1997.
- [24] Weak limits for diaphony. *Lecture Notes in Stat.*, **127**:330–339, 1997.

### Conference Proceedings (Non-Refereed)

- [25] Problems in inference after model selection. (With B.M. Pötscher) In *Proceedings of the 23rd European Meeting of Statisticians, August 13–18, 2000, Madeira, Portugal*, Revista de Estatística – Statistical Review, pages 249–250, 2001.
- [26] 3D-morphometry in scanning electron microscopy: Theory and applications. (With B. Minnich, E.W.N. Bernroider, W.D. Krautgartner and A. Lametschwandtner.) In *Proceedings of the 12th European Congress on Electron Microscopy, Brno, CZ*, pages 555–556, 2000.
- [27] Quantitative morphometry of microstructures in scanning electron microscopy based on stereophotogrammetric principles and digital image analysis. (With B. Minnich, W.D. Krautgartner and A. Lametschwandtner.) In *Proceedings of the IV. Multinational Congress on Electron Microscopy, September 5–8, 1999, University of Veszprém, Hungary*, pages 125–126, 1999.
- [28] On the digit test. In P. Hellekalek et al., editors, *Proceedings of the 1st Salzburg Minisymposium on Pseudorandom Number Generation and Quasi-Monte Carlo Methods, Salzburg, November 18, 1994*, ACPC/TR 95-4, pages 109–121. ACPC – Austrian Center for Parallel Computation, University of Vienna, Austria, 1995.
- [29] Inversive pseudorandom number generators: Empirical results. (With K. Entacher.) *Parallel Numerics 95, Sorrento, Italy, September 27–29, 1995*, G. DePietro et al. (eds.), pages 15–27, 1995.
- [30] PLAB – a system for testing random numbers. *Parallel Numerics '94, Smolenice, September 19–21, M. Vajtersić and P. Zinterhof* (eds.), pages 89–99, Slovakia, 1994.

## Technical Reports

- [31] PLAB – library reference, version 1.0. (With O. Lendl.) Report no. 4, PLAB – reports, University of Salzburg, 1997.
- [32] PLAB – a system for generating and testing random numbers. Report no. 3, PLAB – reports, University of Salzburg, 1997.
- [33] A weak law for diaphony. Rist++ 13, Research Institute for Software Technology, University of Salzburg, 1996.
- [34] The asymptotic distribution of diaphony in one dimension. G-96-52, GERAD - École des Hautes Études Commerciales, Montréal, 1996.

## Theses

- [35] Stochastic properties of diaphony. PhD thesis, University of Salzburg, 1997.
- [36] Random numbers for computer simulation. Master’s thesis, University of Salzburg, 1995.

## Invited Presentations

- [1] Banff International Research Station, Sep. 16, 2008.
- [2] Workshop ‘Current Trends and Challenges In Model Selection And Related Areas,’ Jul. 25, 2008.
- [3] Arsenal Research, Vienna, Jul. 22, 2008.
- [4] Department of Statistics, University of California at Los Angeles, Nov. 20, 2007.
- [5] The Greater NY Metropolitan Econometrics Colloquium, University of Pennsylvania, Dec. 1, 2007.
- [6] Mathematisches Forschungsinstitut Oberwolfach, Oct. 25, 2007.
- [7] Department of Mathematics, University of Connecticut, Apr. 27, 2007.
- [8] Institute of Advanced Studies, Vienna, Jan. 26, 2007.
- [9] Department of Mathematics, Humboldt University Berlin, Jan. 12, 2007.
- [10] Department of Statistics, University of Vienna, Dec. 13, 2006.
- [11] Department of Statistics, University of Michigan, Ann Arbor, Mar. 24, 2006.
- [12] Joint Program on Survey Methodology, University of Maryland at College Park, Feb. 24, 2006.
- [13] Department of Mathematics, University of Maryland at College Park, Feb. 23, 2006.
- [14] Department of Statistics, University of Connecticut, Sep. 11, 2005.
- [15] Department of Statistics, Yale University, Oct. 17, 2005.
- [16] Department of Statistics, University of Vienna, Jun. 27, 2005.
- [17] Department of Economics, University of Exeter, Jun. 21, 2005.
- [18] Department of Economics, University of Pittsburgh, Mar. 25, 2005.
- [19] Department of Statistics, The Wharton School, University of Pennsylvania, Mar. 2, 2005.
- [20] Department of Statistics, Columbia University, Sep. 13, 2004.
- [21] Joint Statistical Meetings, Aug. 8-12, 2004, Toronto, Canada.
- [22] Department of Statistics, Technical University Graz, Jun. 28, 2004.
- [23] Department of Mathematics, University of Salzburg, Jun. 24, 2004.
- [24] ASA Connecticut Chapter Meeting, May 13, 2004.
- [25] Department of Statistics, University of Vienna, Nov. 24, 2003.

- [26] Department of Economics, Yale University, Feb. 26, 2003.
- [27] Department of Statistics, Yale University, Feb. 24, 2003.
- [28] Department of Statistics, University of California at Davis, Feb. 10, 2003.
- [29] Department of Statistics, Yale University, Oct. 14, 2002.
- [30] Department of Mathematics, University of Salzburg, Jun. 29, 2001.
- [31] Department of Statistics, Yale University, Apr. 13, 2001.
- [32] Department of Mathematics, TU Darmstadt, Oct. 14, 1998.
- [33] Department of Statistics, Vienna University of Economics and Business Admin., Jan. 27, 1998.
- [34] Department of Statistics, University of Montreal, Oct. 10, 1996.

## Contributed Presentations

- [35] Department of Statistics, Yale University, Oct. 8, 2007.
- [36] Joint Statistical Meeting 2007, Ju. 29 – Aug. 2, 2007, Salt Lake City, UT.
- [37] The Second Erich L. Lehmann Symposium, May 19-22, 2004, Houston, TX.
- [38] 24rd European Meeting of Statisticians, Aug., 19-23, 2002, Prague, Czech Republic.
- [39] Perspectives in Modern Statistical Inference II, Aug., 14–17, 2002, Brno, Czech Republic.
- [40] Statistiktage 2001, Oct. 16–19, 2001, Vienna, Austria.
- [41] 23rd European Meeting Of Statisticians, Aug. 13–19, 2001, Madeira, Portugal.
- [42] MRSI Workshop on Nonlinear Estimation And Classification, Mar. 19–29, 2001, Berkeley, CA.
- [43] HSSS Workshop on Bias Reduction And Confidence Estimation In Complex Models, Jun. 1–3, 2000, Lillesand, Norway.
- [44] Department of Statistics, University of Vienna, Mar. 27, 2000.
- [45] Fourth Meeting of Austrian, Slovenian, Italian and Hungarian Young Statisticians, Oct. 8–10, 1999, Pécs, Hungary.
- [46] Joint Statistical Meeting 1999, Aug. 8–12, 1999, Baltimore, MD.
- [47] Fourth North American Meeting Of New Researchers, Aug. 4–7, 1999, Baltimore, MD.
- [48] Third International Conference on Monte Carlo And Quasi-Monte Carlo Methods In Scientific Computing, Jun. 22–26, 1998, Claremont Colleges, Claremont, CA.
- [49] XIV. Congress of the Austrian Mathematical Society, Sep. 22–26, 1997, Salzburg, Austria.
- [50] Open Seminar of Working Group 9, February 5, 1997, Department of Mathematics, TU Darmstadt, Feb. 5, 1997.
- [51] Second International Conference on Monte Carlo And Quasi-Monte Carlo Methods In Scientific Computing, Jul. 9–12, 1996, University of Salzburg, Austria.
- [52] Extended Workshop on Pseudorandom Number Generation, Jun. 3–21, 1996, University of Montreal, Canada.
- [53] Workshop “Pseudozufallszahlen”. Feb. 1, 1996, Technische Hochschule Darmstadt, Germany.
- [54] Minisymposium on Mathematical Statistics and “Austrian Stochastics Days” Mar. 20–24, 1995, University of Vienna, Austria.
- [55] 1st Salzburg Minisymposium on Pseudorandom Number Generation And Quasi-Monte Carlo Methods, Nov. 18, 1994, University of Salzburg, Austria.
- [56] International Workshop Parallel Numerics 94, Sep. 19–21, 1994, Smolenice Castle, Slovakia.

## Other Professional Activities

- Yale College Committee on Majors, 2007 – .
- Organization of a workshop on model selection and related regularization techniques, 2008.
- Reviewer for NSF in 2007 and panellist 2008.
- Guest editor of the Econometric Theory Special Issue on recent developments in model selection and related areas, 2006 – 2007.
- Departmental seminar organizer, Department of Statistics, Yale University; 2003 – 2006.
- Referee for scientific journals: ACM TOMACS, Annals of Statistics, Automatica, Biometrical Journal, Computational Statistics, Econometric Theory, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Computers, Journal of Econometrics, Journal of Multivariate Analysis, Journal of Time Series Analysis, Lecture Notes in Statistics, Operations Research, Österreichische Zeitschrift für Statistik, Statistics.
- Reviewer for Mathematical Reviews.

## Visits

- University of Vienna, Department of Statistics, May - July 2005 (visiting professor).
- Yale University, Department of Statistics, October 2002 - June 2003 (Max Kade fellowship).
- GERAD - École des Hautes Études Commerciales, Montréal, June 1997.
- Technische Hochschule Darmstadt, February 1997.
- University of Montreal, September - October 1996.