

September 4, 2008

## SHORT CURRICULUM VITAE for

Henrik Madsen, born 15 October 1955. Married 6 September 1980 with Marianna Madsen.

- Employed as researcher at the Section of Mathematics at DIAB, February 1980.
- M.Sc. in Engineering (Civilingeniør) from (DTU) specializing (eksamensprojekt) in Statistics, January 1982.
- Selective military service, August 1984 - May 1985.
- Ph.D. (Lic. Techn.), January 1986.
- Ass. Prof. (Adjunkt) in mathematical statistics at IMSOR, February 1986 - September 1989.
- Received 'Direktør Peter Gorm-Petersens Mindelegat' at the annual celebration of the University as an acknowledgement of my research, May 1987.
- Assoc. Prof. (Lektor) in Mathematical Statistics at IMSOR, September 1989 - .
- External lecture at the University of Copenhagen, Institute of Mathematical Statistics (KUIMS), in Time Series Analysis, September 1989 - February 1990.
- Invited external lecture (ECMI) at the Fourier University, Grenoble, 1994.
- Received a prize (60.000 dkr.) 'Fabrikant Ulrik Brinch og hustru Marie Brinchs legat' as an acknowledgement of my contribution to the theory for and engineering applications of dynamical stochastic systems. March 1997.
- Professor in *Stochastic Dynamic Systems* in the Section of Mathematical Statistics, Inst. Math. Modelling, DTU. April 1999.
- Head of the Research Committee at Informatics and Math. Modelling, 2000-2005.
- Co-chair of the board for the Danish Society for Theoretical Statistics (DSTS), February 2001 - February 2004.
- Negotiated an agreement with Sun Microsystem, San Francisco, where IMM is declared a *Center of Excellence in Dynamic Systems and Interval Arithmetic*, June 2001.
- Negotiation of contract and installation of large SMP computers at DTU. The nominal value was about 100 mill. dkr. During 2001.
- Head of *Center for High Performance Computing* at DTU which was opened by the *Danish Minister of Research*, February 2002 - .
- Member of the advisory committee for *Danish Center Scientific Computing*, May 2003 - .
- Member of Advisory Board for MathWorks (Matlab), May 2006 - .

## PUBLICATIONS

More than 275 publications including 116 papers in journals, 11 research monograph, 5 books (latest books: *H. Madsen, Time Series Analysis, Chapman and Hall, 392 pp., 2007* and *P. Thyregod and H. Madsen, General and Generalized Linear Models, Chapman and Hall, 280 pp. - will be published in 2008*).

## PH.D. SUPERVISION

Supervision of 24 completed PhD projects. Currently supervising 12 PhD students.

## FURTHER PROFESSIONAL ASSIGNMENTS

I am or have been the leader of – or participated in – a number of research projects financed by the Danish Technical Research Council (STVF), Danish Agricultural and Veterinary Research Council (SJVF), EU, NATO, Ministry of Industry (Erhvervsfremmestyrelsen), Nordic Council (Nordisk Ministerråd), Ministry of Environment and Energy (Energi- og Miljøministeriet), Danish Research Academy (Forskerakademiet), Danish Academy for Technical Sciences (ATV) and a large number of private companies.

The total budget for the research projects I am involved in today is more than 80 mill. dkr. with partners from both Denmark, a number of European countries and US. I am the head of *Center for High Performance Computing* at DTU which was opened by the Danish Minister of Research in February 2002.

I am or have been referee at a number of professional journals: Automatica, IEEE Transactions on Automatic Control, Water Research, Environmetrics, Journal of Applied Mathematics and Computer Science, etc. Furthermore, I have reviewed chapters in books. I have also been a referee for large number of international conferences, and I have taken part of organization committees.

I have been a member of selection committees for several positions at DTU, The University of Copenhagen, University of Oslo, and UNI-C. I am external examiner in Mathematics and Statistics at IABM/DTU. Furthermore I have been external examiner for several Ph.D. projects at DTU, at the University of Southern Denmark, Odense, Universities in France, and at the Department of Mathematical Statistics, University of Lund.

#### SELECTED PUBLICATIONS – Journal papers 2005-08 only

1. R.V. Overgaard, E.N. Jonsson, C.W. Tornøe, H. Madsen: *Non-linear Mixed-Effect Models with Stochastic Differential Equations. Implementation of an Estimation Algorithm*. J. Pharmacokinet. Pharmacodyn., Vol. 32, No. 1, pp. 85-107, 2005.
2. L.E. Christiansen, Anderson, H. Wegener, H. Madsen: *Spatial Span Statistics using Elliptic Clusters*, Accepted by Jour. Agricultural Biological and Environmental Statistics, 2005
3. M. Drews, B. Lauritzen, H. Madsen: *Analysis of a Kalman filter based method for on-line estimation of atmospheric dispersion parameters using radiation monitoring data*. Radiation Protection Dosimetry, Vol. 113, No. 1, pp. 75-89, 2005.
4. C.W. Tornøe, R.V. Overgaard, H. Agersø, H.Aa. Nielsen, H. Madsen, E.N. Jonsson: *Stochastic Differential Equations in NONMEM: Implementation, Application and Comparison with Ordinary Differential Equations*, Pharm. Res., Vol. 22, pp. 1247-1258, 2005.
5. C.W. Tornøe, H. Agersø, T. Senderovitz, H.Aa. Nielsen, H. Madsen, M.O. Karlsson, E.N. Jonsson: *Mechanism-based population PK/PD modeling of the hypothalamic-pituitary-gonadal axis after treatment with GnRH agonist triptorelin and GnRH antagonist degarelix*. Am. J. Physiol, 2005.
6. H. Madsen, P. Pinson, G. Kariniotakis, H.Aa. Nielsen, T.S. Nilsen: *Standardizing the performance evaluation of short-term wind prediction models*, Wind Engineering, Vol. 29, pp. 475-489, 2005.
7. N.R. Kristensen, H. Madsen, S.H. Ingwersen: *Using stochastic differential equations for PK/PD model development*, Journal of Pharmacokinetics and Pharmacodynamics, Vol. 32, pp. 109-141, 2005.
8. H. Jonsdottir, H. Madsen: *Assessment of serious water shortage in the Icelandic water resource system*, Physics and Chemistry of the Earth, Vol. 30, pp. 420-425, 2005.
9. R. Vio, N.R. Kristensen, H. Madsen, W. Wamsteker: *Time Series Analysis in Astronomy; Limits and Potentialities*, Astronomy and Astrophysics, Vol. 435, pp. 773-780, 2005.
10. K. Nolsøe, M. Kessler, J. Pérez, H. Madsen: *Bayesian conformational analysis of ring molecules through reversible jump MCMC*, Chemometrics, Vol. 19, pp. 412-426, 2005.
11. R.V. Overgaard, N. Jonsson, C.W. Tornøe, H. Madsen: *Non-linear mixed-effects models with stochastic differential equations; implementation of an estimation algorithm*, J. Pharmacokinet. Pharmacodyn., Vol. 32, pp. 85-107, 2005.
12. R.V. Overgaard, J.E. Henriksen, H. Madsen: *Insights to the minimal model of insulin secretion through a mean-field beta cell model*, Jour. Theoretical Biology, Vol. 237, 382-389, 2005.
13. H.Aa. Nielsen, H. Madsen: *Modelling the heat consumption in district heating systems using a grey-box approach*, Energy and Buildings, Vol. 38, pp. 63-71, 2006.
14. L.E. Christiansen, J.S. Andersen, H. Wegener, F. Aarestrup, H. Madsen: *Modelling microbial growth in a rich medium and the effect of adding copper*, J. of Theoretical Biology, 2006.
15. J.V. Tornfeldt Sørensen, H. Madsen, H. Madsen: *Parameter sensitivity of three Kalman Filter schemes for the assimilation of tide gauge data in coastal and shelf sea models*, Ocean Modelling, Vol. 11, 441-463, 2006.
16. K. Nolsøe, J.N. Nielsen, H. Madsen: *Prediction-based estimating functions for diffusion processes with measurement noise*, submitted, 2006.
17. H. Jonsdottir, H. Madsen, O.P. Palsson: *Parameter Estimation in Stochastic Rainfall-runoff Models*, Jour. Hydrology, Vol. 326, pp. 379-393, 2006.
18. R. Vio, P. Rebusco, P. Andreani, H. Madsen, R.V. Overgaard: *Stochastic modeling of kHz quasi-periodic oscillation light curves*, Astronomy and Astrophysics, Vol. 452, pp. 383-386, 2006.
19. H. Madsen, P. Thyregod, B. Burtschy, F. Popenteu, G. Albeneau: *On using soft computing techniques in software reliability engineering*, Int. Journ. Reliability, Quality and Safety Engineering, Vol. 13, pp. 61-72, 2006.
20. R.V. Overgaard, K. Jelic, M. Karlsson, J.E. Henriksen, H. Madsen: *Mathematical Beta Cell Model for Insulin Secretion following IVGTT and OGTT*, Annals of Biomedical Eng., Vol. 38, pp. 1343-1354, 2006.
21. H.Aa. Nielsen, H. Madsen, T.S. Nielsen: *Using quantile regression to extend an existing wind forecasting system with probabilistic forecasts*, Wind Energy, Vol. 9, pp. 95-108, 2006.
22. Florin-Paul, D., H. Madsen, M. Schumperli, M. Heinemann, S. Panke, S.B. Jørgensen: *Stochastic Grey Box Modelling of the Enzymatic Biochemical Reaction Network E. coli mutants*, Computer Aided Chemical Engineering, Vol. 21, pp. 161-166, 2006.

23. Rasmussen, J.K., H. Madsen, S.B. Jørgensen: *Grey-box stochastic modelling of industrial fed-batch cultivation*, Computer Aided Chemical Engineering, Vol. 21, pp. 421-426, 2006.
24. R.V. Overgaard, N. Holford, K.A. Rytved, H. Madsen: *PKPD Model of Interleukin-21 effects on Thermoregulation in Monkeys*, Pharmaceutical Research, Vol. 24, pp. 298-309, 2007.
25. J.B. Jørgensen, M.R. Kristensen, P.G. Thomsen, H. Madsen: *Efficient numerical implementation of the continuous-discrete extended Kalman Filter*, Computers and Chemical Engineering, 2007.
26. C.W. Tornøe, H. Agersø, H. Madsen, E.N. Jonsson, M. Karlsson: *Population PK/PD modelling of the hypothalamic-pituitary-gonadal axis following treatment with GnRH analogues*, British Journal of Clinical Pharmacology, Vol. 63, pp. 648-664, 2007.
27. P. Pinson, H.A. Nielsen, J.K. Møller, H. Madsen, G. Kariniotakis: *Nonparametric probabilistic forecasts of wind power: required properties and evaluation*, Wind Energy, Vol. 10, pp. 497-516, 2007.
28. P. Sørensen, N.A. Cutululis, A. Viguera-Rodriguez, H. Madsen, P. Pinson, L.E. Jensen, J. Hjerrild, M. Donovan. *Modelling of power fluctuations from large offshore wind farms*. IEEE Trans. Power Systems, Vol. 22, pp. 958-965, 2007.
29. H. Jonsdottir, H.A. Nielsen, H. Madsen, J. Eliasson, O.P. Palsson, M. K. Nielsen: *Conditional parametric models for storm sewer runoff*, Water Resources Research, Vol. 43, 2007.
30. S.B. Mortensen, S. Klim, B. Dammann, N.R. Kristensen, H. Madsen, R.V. Overgaard: *A Matlab Framework for Estimation of NLME Models using Stochastic Differential Equations*, Journal of Pharmacokinetics and Pharmacodynamics, Vol. 34, pp. 623-642, 2007.
31. A. Costa, A. Crespo, J. Navarro, G. Lizcano, H. Madsen, F. Feitosa, *A review on the young history of the wind power short-term prediction*, Renew. Sustain. Energy Rev., 2007.
32. P. Pinson, G. Papaefthymiou, B. Klockl, H.Aa. Nielsen, H. Madsen: *From probabilistic forecasts to statistical scenarios of short-term wind power production*, IEEE Trans. on Power Systems, submitted, 2007.
33. A. H. Jonsdottir, H. Madsen, J. Matz: *Comparison of different methods used for QT correction in healthy volunteers*, submitted, 2007.
34. M. Pastell, H. Madsen: *Application of CUSUM charts to detect lameeness in a milking robot*, Expert Systems with Applications, 2007.
35. U.E. Lindblom, H. Madsen, P.S. Mikkelsen: *Comparative uncertainty analysis of copper loads in stormwater systems using GLUE and grey-box modelling*, Water Science and Technology, Vol. 56, pp. 11-18, 2007.
36. P. Pinson, T.S. Nielsen, H.Aa. Nielsen, N.K. Poulsen, H. Madsen: *Temperature prediction at critical points in district heating systems*. European Journal of Operational Research, submitted, 2007
37. H.A. Nielsen, T.S. Nielsen, H. Madsen, S.I. Pindado, M. Jesus, M. Ignacio: *Optimal Combination of Wind Power Forecasts*, Wind Energy, Vol. 10, pp. 471-482.
38. Florin-Paul, D., H. Madsen, S.B. Jørgensen: *Systematic qualitative experimental design based upon identifiability analysis*, Computer Aided Chemical Engineering, Vol. 24, pp. 57-62, 2007.
39. P. Pinson, G. Papaefthymiou, B. Klockl, H.A. Nielsen, H. Madsen: *From probabilistic forecasts to statistical scenarios of short-term wind power production*, IEEE Transactions on Power Systems, 2007.
40. P. Pinson, H. A. Nielsen, H. Madsen, G. Kariniotakis: *Skill forecasting from ensemble predictions of wind power*, Renewable Energy, 2007.
41. P. Pinson, H. Madsen: *Adaptive Markov-switching modeling of wind power fluctuations*, Jour. Royal Statistics Society: Series C, (in progress), 2007.
42. J.K. Møller, H. Madsen, H.Aa. Nielsen: *Time Adaptive Quantile Regression*, Computational Statistics and Data Analysis, Vol. 52, pp. 1292-1303, 2008.
43. L.E. Christiansen, J.S. Andersen, H.C. Wegener, H. Madsen: *Estimating the parameters of a stochastic differential equation model of bacterial growth*, Biometrics, 2008.
44. M.J. Jiménez, H. Madsen: *Models for Describing the Thermal Characteristics of Building Components*, Building and Energy, 2008.
45. M.J. Jiménez, H. Madsen, K.K. Andersen: *Identification of the Main Thermal Characteristics of Building Components using MATLAB*, Building and Energy, Vol. 43, pp. 170-180, 2008.
46. P. Pinson, H.Aa. Nielsen, H. Madsen, T.S. Nielsen): *Local linear regression with adaptive orthogonal fitting for the wind power application*. Statistics and Computing, Vol. 18, pp. 59-71, 2008.
47. P. Pinson, L.E.A. Christensen, H. Madsen, P.E. Sørensen, M.H. Donovan, L.E. Jensen. *Regime-switching modelling of the fluctuations of offshore wind generation*. J. of Wind Engineering and Industrial Aerodynamics, 2008.
48. M. Wæver, D. Righton, U.H. Thygesen, K. Andersen, H. Madsen. *Geolocation of North Sea cod using Hidden Markov Models and behavioural switching* Canadian Journal of Fisheries and Aquatic Sciences, 2008.

A full list (containing about 275 entries) can be forwarded upon request.