

# CURRICULUM VITAE

March 2007

Mai Gehrke

**Education:** Ph.D. (1987) and Master's Degree (1985), University of Houston  
Advisor: Klaus Kaiser.

**Permanent position:** Currently in the process of accepting Professorship in Algebra, IMAPP, Radboud University, Nijmegen, NL.

Full Professor (2000), Associate Professor (1993), Assistant Professor (1990); Department of Mathematical Sciences, New Mexico State University, USA.

**Extended Academic visits:** Oxford (2006-2007), Paris (CS,05-08/2006), Copenhagen (Math&CS, 2004-2005; Fall 1996), Nashville (1988-1990, Spring 1997), Nice (Spring 1988), Strasbourg/Mulhouse (Fall 1987).

## Recent Grants and awards:

1. EPSRC £31,000 supporting my visit, PIs: H.A. Priestley (Math) & A. Kurz (CS), Project title: Relational semantics for substructural and other logics, Spring 2007.
2. *Plumer Visiting Fellow*, St. Anne's College, Oxford, September 2006.
3. LMS £500 Scheme 7 grant – Computer Science, PI: H.A. Priestley, Fall 2006.
4. DTU (Denmark's Technical University), Computer Science, DK12,000, Visitors grant, Fall 2006.
5. LANL (Los Alamos National Laboratories) \$155,000 (mainly supporting students), one of six NMSU team members, Project title: Social Dynamics Modelling, 2006-2008.
6. Carlsberg Foundation DK130,000 supporting my visit, PI: F. Topsøe, Project title: Algebraic logic, Spring 2005.
7. EPSRC £7,100 supporting my visits, PI: H.A. Priestley, Project title: Canonicity, duality, and correspondence, 2004-2005. Final report rating: outstanding.
8. NSF (US National Science Foundation) ADVANCE personal sub-awards, \$35,010 without overhead, Project title: Applications of lattice theory, 2002 – 2005.
9. USCRDF/GRDF Georgian-US bilateral grants program \$250,000, Co-PI with L. Esakia, Project title: Applications of Topology and Algebra to Modal Logic, 2003-2004.

## Students:

*Advisor*, Master's student Julie Manisha de Montgomery Nørgaard, University of Copenhagen, 2004 – 2005, Thesis Title: Relational semantics based on perfect posets, Master's completed June 2005.

*Co-advisor* with Raquel Santos for Candida Palma, Ph. D. student at the University of Lisbon, Spring 2001-June 2005, Dissertation title: Semi De Morgan Algebras, Ph. D. completed June 2005.

*Advisor* for Hideo Nagahashi, Ph. D. student, Fall 1995-Spring 2002, Dissertation Title: A Sahlqvist Theorem for Distributive Modal Logics, Ph.D. completed Spring 2002.

*Advisor* for Alex Pogel, Ph.D. student, Spring 1995- Summer 1998, Dissertation Title: Stone Triples and Self-Duality, Ph.D. completed Summer 1998.

**Publications:** 7 papers and 1 book in preparation; 47 publications (33 in international journals, 14 of these since 2002). Recent publications:

1. Complete Congruences on Topologies and Down-Set Lattices, with Marcel Ern  and Aleř Pultr, accepted for the Proceedings of the conference on The frames and Spaces of Ordered Algebraic Structures in honour of Bernhard Banaschewski's 80th birthday, November 2006.
2. Duality for certain algebras with binary operations via their canonical extensions, with H.A.

Priestley, in Press *Studia Logica*, November 2006.

3. Canonical extensions of certain algebras with binary operations: an algebraic perspective on duality. with H. A. Priestley, 30 pages, in press *Journal of Pure and Applied Algebra*, online since December 2006. See <http://dx.doi.org/10.1016/j.jpaa.2006.06.001>
4. Profinite and canonical completions of Heyting algebras, with Guram Bezhanishvili, Ray Mines, and Patrick Morandi, 19 pages, in press *Order*, November 2006.
5. Generalised Kripke semantics, 22 pages, to appear in the special issue '40 years of possible world semantics', part II, *Studia Logica*, online since November 2006.
6. Special section on Concept oriented knowledge representation under uncertainty, co-editor with H.L. Larsen, *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, **14**, no. 1, February 2006.
7. Canonical extensions and relational completeness of some substructural logics, with Michael Dunn and Alessandra Palmigiano, *J. Symb. Logic* **70** no.3, 713 – 740, 2005.
8. A Sahlqvist Theorem for distributive modal logics, with Hideo Nagahashi and Yde Venema, *Annals of Pure and Applied Logic* **131**, Issues 1-3, 65 – 102, January 2005.
9. MacNeille completions and canonical extensions, with John Harding and Yde Venema, *Trans. of Amer. Math. Soc.* **358** no.2, 573 – 590, 2005.
10. Completeness of S4 with respect to the real line: revisited, with Guram Bezhanishvili, *Annals of Pure and Applied Logic* **131**, Issues 1-3, 287-301, January 2005.

**Talks:** 3 lecture series, 9 invited addresses, 16 other conference talks, 43 invited talks at universities, 1 invited seminar series. Recent talks:

1. *Automata, semigroups, and duality*, Japan Advanced Institute of Technology, Kanasawa, Japan, January 2007.
2. *Distributive lattice-structured ontologies*, Department of Computer Science Seminar, University of Leicester, December 2006.
3. *Duality Theory in the study of semigroups and automata*, Foundations of Computer Science Lunch Seminar, Computing Laboratory, University of Oxford, November 2006.
4. *Completing lattices and generalising Kripke semantics*, Algebra & Substructural Logic – Take Three workshop, Krakow, Poland, November 2006.
5. *Distributive lattice-structured ontologies*, Databases Seminar, Computing Laboratory, University of Oxford, October 2006.
6. *Duality for quasi-operator algebras and relations to MV-algebras*, Plenary lecture, International Symposium on Ordered Structures in Many-Valued Logic, Massa Lubrense, Italy, June 2006.
7. *Représentation concrète des algèbres ordonnées*, LIAFA Automata seminar, Paris VII, May 2006.
8. *Generalized Kripke structures for substructural logics*, seminar of the PPS, Paris VII, May 2006.
9. *Non-classical logics in Computer Science*, Colloquium, Department of Computer Science, New Mexico State University, April 2006.
10. *Complete congruences of up-set lattices*, Modal Logic Workshop, Institute for Logic, Language and Computation, University of Amsterdam, March 2006.
11. *Non-classical logics in Computer Science*, Colloquium, Department of Mathematics, University of Houston, November 2005.
12. *Algebraic methods in computer science logic*, Colloquium, Department of Mathematical Sciences, New Mexico State University, September 2005.
13. *New developments in the theory of canonical extensions: a categorical perspective*, Department of Pure Mathematics and Mathematical Statistics Category Theory Seminar, Cambridge University. August 2005.
14. *Resource sensitive frames*, The Oxford Advanced Seminar on Informatic Structures, Com-

puting Laboratory, University of Oxford, July 2005.

15. *Generalised Kripke frames*, Algebraic and Topological Methods in Non-Classical Logics II, Barcelona, June 2005.

16. *Relational semantics for logics of resource sensitive computation*, Department of Computer Science and Engineering Seminar, Informatics and Mathematical Modelling, DTU, May 2005.

17. *Relational semantics for substructural logics I and II*, Seminar of the Copenhagen Logic Group, April and May 2005.

**Research management and promotion:** refereeing for over 15 international journals; grant review; 2 conference organisation; 6 conference program committees; consulting for Physical Science Laboratory at New Mexico State University: start-up of logic research cluster (1999 – 2002); tenure and promotion review and young faculty mentoring for both mathematics and computer science; service on 17 graduate student committees; panel member at Association for Women in Mathematics Careers Workshop.