

CURRICULUM VITA OF SALAH E.A. MOHAMMED*

I. PERSONAL

- A. Present Home Address: 231 Union Grove Road, Carbondale, IL 62903
- B. Home Page: <http://sfde.math.siu.edu>
- C. E-mail Address: salah@sfde.math.siu.edu
- D. Present University Department: Mathematics
- E. Citizenship: U.S.

II. EDUCATION

- B.Sc. (First Class with Distinction) University of Khartoum, Sudan, (Africa), 1970
- M.Sc. (With Distinction) University of Dundee, Scotland, 1972.
- M. Sc. Thesis Advisor: Prof Brian Sleeman.
- Ph.D. University of Warwick, England, 1976.
- Ph. D. Thesis Advisor: Prof James Eells.

III. PROFESSIONAL EXPERIENCE

- 1970–1976 Research Assistant, Department of Mathematics, Faculty of Engineering and Architecture, University of Khartoum, Sudan
- 1976–1984 Lecturer in Mathematics, School of Mathematical Sciences, University of Khartoum, Sudan
- 1981–1982 SERC Fellow, Department of Pure Mathematics, University of Hull, England
- 1982–1987 British Council Visiting Fellow in the Mathematics Research Centre, University of Warwick, England
- 1984–1985 Visiting Associate Professor, Department of Mathematics, Southern Illinois University-Carbondale
- 1985-1989 Associate Professor, Department of Mathematics, Southern Illinois University-Carbondale
- 1/86–5/86 Visiting Research Fellow, NSF Institute for Mathematics & Its Applications (I.M.A.), University of Minnesota, Minneapolis
- 2/87–8/87 Alexander von Humboldt Research Fellow, University of Kaiserslautern, W. Germany
- 1989– Professor, Department of Mathematics, Southern Illinois University-Carbondale
- 7/89–8/89 Alexander von Humboldt Research Fellow, University of Kaiserslautern, West Germany
- 8/90–8/91 Invited Visiting Research Professor, Department of Mathematics, Carnegie Mellon University, Pittsburgh, Pennsylvania

* July 4, 2016.

- 6/94–7/94 Alexander von Humboldt Research Fellow, University of Kaiserslautern, Germany
- 1997-1998 **Research Professor, Mathematical Research Institute (MSRI), Berkeley, California.**
- June 99 Visiting Research Professor, Institut Elie Cartan, Université Henri Poincaré Nancy 1, Nancy, France
- 6/03–8/03 Alexander von Humboldt Research Fellow, University of Kaiserslautern, Germany
- September 04 Invited Visiting Research Professor, Centre of Mathematics for Applications (CMA), Department of Mathematics, University of Oslo, Oslo, Norway.
- October 04 Invited Visiting Research Professor, Department of Mathematics, Humboldt University, Berlin, Germany.
- 2005– Associate Editor, *Journal of Applied Mathematics and Stochastic Analysis* (JAMSA), continued as the *International Journal of Stochastic Analysis* (IJSA).
- 2006– *Distinguished Scholar*, SIU-C.
- 9/07-12/07 Scientist in residence, Institut Mittag-Leffler, Royal Swedish Academy of Sciences, Stockholm, Sweden.
- 1/10-7/10 Visiting Research Fellow, Isaac Newton Institute for Mathematical Sciences, University of Cambridge, Cambridge, UK.
- 1/10-7/10 Visiting Research Fellow, Clare Hall College, University of Cambridge, Cambridge, UK.
- October 2010- Life Member, Clare Hall College, University of Cambridge, Cambridge, UK.
- 2011– Associate Editor, *Global and Stochastic Analysis*.
- 5/15/11–8/15/11 Alexander von Humboldt Research Fellow, University of Kaiserslautern, Germany.
- 1/1/12–6/30/12 Invited Visiting Research Professor, Centre of Mathematics for Applications (CMA), University of Oslo, Norway.
- 9/10/12–12/10/12 Invited Visiting Research Fellow, *Institute for Mathematics and its Applications* (IMA), University of Minnesota, Minneapolis, Minnesota.
- 2012- Member: Advisory Board, Pan-African Center of Excellence, Dar-es-Salaam, Tanzania.
- 8/1/16–11/1/16 Alexander von Humboldt Research Fellow, Technical University of Berlin , Germany.

IV. TEACHING EXPERIENCE

A. Names of students who have completed their master's theses and doctoral dissertations under my direction:

Tag Elsir Ali Ahmed, Master's Thesis, 1980-83 (jointly with Dr. S.A. Elsanousi)

Mercedes Arriojas, Master's Thesis, 1993. Title of dissertation "A Stochastic Delay Model in Mathematical Finance".

Mercedes Arriojas, PhD Thesis, 1997. Title of dissertation "A Stochastic Calculus for Functional Differential Equations".

Feng Yan, PhD Thesis, 1999. Title of dissertation "Topics on Stochastic Delay Equations".

Flavia Sancier-Barbosa, Master's Thesis, 2006.

Flavia Sancier-Barbosa, PhD, 2011.

Gayan Wilathgamuwa, PhD, 2011.

Elisabeth Kemajou, PhD, 2012.

V. UNIVERSITY SERVICE

A. Department Committees:

1. Member of Examinations Committee, Faculty of Engineering and Architecture, University of Khartoum; 1976-77.
2. Secretary to the Academic Board of the School of Mathematical Sciences, University of Khartoum; 1977-78.
3. Member of the Organizing Committee for the International Conference on Developing Mathematics in Third World Countries (Khartoum, March 1978); 1977-78.
4. Secretary, Research Committee, School of Mathematical Sciences, University of Khartoum; 1980-81.
5. Graduate Programs Committee, Department of Mathematics, Southern Illinois University-Carbondale.
6. Assistant Graduate Advisor, Mathematics Department, SIU-C (Fall 88 - Spring 89).
7. Planning Committee, Department of Mathematics, Southern Illinois University-Carbondale.

VI. PROFESSIONAL SERVICE

A. Offices Held and Honors Awarded in Professional Associations:

1. Member, Organizing Committee, Midwest Probability Colloquium, 1993-1994, 2002-2003.
2. Member, Selection Committee, King Faisal International Prize in Science (Mathematics) for 2002, November 24-27, 2001.
3. Member, Organizing Committee, Workshop on "Probability and Partial Differential Equations in Modern Applied Mathematics", IMA, Minneapolis, Minnesota, July 21-August 1, 2003.

4. Member, Advisory Board, Department of Mathematical Sciences, Carnegie Mellon University, March 2003.

B. Evaluation of Manuscripts for Journals and Book Publishers and of Grant Proposals for Agencies:

1. Referee for: "Proceedings of the Edinburgh Mathematical Society", "Annals of Probability", "Annals of Applied Probability", "Stochastic Processes and Their Applications".
2. Reviewer for NSF.
3. Member of NSF screening panel.
4. Reviewer for "Mathematical Reviews".

C. Papers and Presentations at Professional Meetings

1. "Markov Solutions of Stochastic Functional Differential Equations," International Conference on Differential-Delay Systems and Related Topics, Poland; Polish Academy of Sciences (May 1981). (Invited Talk)
2. "Trajectories of Stochastic F.D.E.'s," Mathematics Institute, University of Kaiserslautern (W.Germany), August 1982. (Invited Talk)
3. "Solutions of a Stochastic Linear Delay Equation are almost surely non-linear in the initial state," Colloquium, Mathematics Department, Carnegie-Mellon University, Friday, January 11, 1985. (Invited Talk)
4. "Diffusions With Delay," Institute for Mathematics and its Applications, University of Minnesota, January 28, 1986. (Invited Talk)
5. "Qualitative Theory of Stochastic Functional Differential Equations," Unite Lecture, Control Theory and Dynamical Systems Seminar, University of Minnesota, May 8, 1986. (Invited Lecture)
6. "The Lyapunov Spectrum and Stable Manifolds for Stochastic Linear Delay Equations," Fachbereich Mathematik, Universitt Kaiserslautern, (W. Germany), March 26, 1987.
7. "Stable Manifolds for Stochastic Delay Equations," Institut for Dynamische Systeme, University of Bremen (W. Germany), April 23, 1987. (Invited Talk)
8. "Stochastic Dynamics of Delay Equations," Equadiff 87, International Conference on Differential Equations, (invited talk in absentia).
9. "Lyapunov Exponents and Stable Manifolds for Stochastic Linear Delay Equations," International Conference on Almost Everywhere Convergence in Probability and Ergodic Theory, Columbus, Ohio, June 11-16, 1988.
10. "Lyapunov Exponents and Asymptotic Dynamics of Stochastic Delay Equations", Conference on Lyapunov Exponents, Northwestern University, October 20, 1988. (Invited talk).
11. "Solution of Itô Stochastic Differential Equations Via Small Delays," Department of Mathematics, University of Kaiserslautern (Germany), July 1989.

12. "Stochastic Delay Equations and the Malliavin Calculus," (with Denis Bell), International Conference on Diffusion Processes, Northwestern University, October 26, 1989.
13. "Random Saddles for Hereditary Systems," Department of Mathematics, Carnegie Mellon University, December 1, 1989. (Invited Talk)
14. "Stochastic Flows of Linear Hereditary Systems," Spring Conference on Stochastic Flows, March 16-18, 1990, University of North Carolina at Charlotte, North Carolina. (Invited Talk)
15. "Lyapunov Exponents of Stochastic Delay Equations: A Survey," International Conference on Lyapunov Exponents, Oberwolfach, West Germany, May 27-June 2, 1990. (Invited Talk).
16. "A Multiplicative Ergodic Theorem for Stochastic Functional Differential Equations Driven by Semimartingales," Department of Mathematics, University of Kaiserslautern (Germany), May 25, 1990. (Invited Talk)
17. "Stochastic Flows of Linear Hereditary Systems," Fachbereich Mathematik, Technical University of Berlin (Germany), May 25, 1990. (Invited Talk)
18. "Linear Hereditary Systems: Ergodic Theory," School of Mathematics and Statistics, University of Hull, England, June 18, 1990 and Mathematics Institute, University of Warwick, June 1990. (Invited Talks)
19. "Stochastic Differential Equations with Delays," Mathematics Institute, University of Oslo, Norway, June 6, 1990. (Invited Talk)
20. "Hyperbolic Stochastic Systems with Hereditary Effects," Department of Mathematics, University of South Florida, Tampa, Florida, April 26, 1991. (Invited Talk)
21. "Degenerate Stochastic Differential Equations, Flows and Hypocoellipticity," AMS Summer Research Institute, Ithaca, Cornell, July 21, 1993. (One-hour Invited Address)
22. "Degenerate Stochastic Differential Equations and Hypocoellipticity," Mathematics Department, Technical University of Berlin, Berlin, Germany, August 19, 1993. (Invited Talk)
23. "Degenerate Stochastic Differential Equations, and Partial Differential Equations ", *A Day Full of Randomness*, Institut für Dynamische Systeme, Universität Bremen, Bremen, Germany, June 3, 1994. (One-hour Invited talk)
24. "On Degenerate Stochastic Differential Equations ", *Workshop on Stochastic Analysis*, Department of Mathematics, University of Kaiserslautern (Germany), June 24, 1994. (Invited Talk)
25. "Degenerate SDE's and PDE's", Department of Mathematics, Iowa State University (Ames, Iowa), December 6, 1994. (Invited Talk)

26. "Some Dynamical Aspects of Stochastic Hereditary Systems ", *Workshop on Stochastic Evolution Equations as Dynamical Systems*, Mathematics Research Centre, University of Warwick, England, March 29, 1995. (One-hour Invited Presentation).
27. "The Top Lyapunov Exponent for Linear Stochastic Delay Equations: Case Studies", *European/ Gregynog Stochastic Analysis Symposium*, University of Wales, Swansea, Wales, July 12, 1995. (One-hour Invited Presentation).
28. "Stochastic Differential Systems with Memory: Theory, Examples and Applications", *International Workshop on Stochastic Analysis*, Oslo, Norway, July 28-August 4, 1996. **One of two main invited speakers**, delivered a series of **six hourly presentations** on the above subject (Lectures available on web-page: <http://salah.math.siu.edu/geilo96.html>).
29. "Growth Rates for Solutions of Stochastic Delay Equations", *Stochastic Analysis Seminar*, Department of Mathematics, University of Illinois, Urbana-Champaign, November 12, 1996. (Invited Talk)
30. "The Stable Manifold Theorem for SDE's, Parts I and II", *Stochastic Analysis Seminar at the Mathematical Sciences Research Institute, Berkeley, California*, December 3 and 5, 1997.
31. "The Stable Manifold Theorem for SDE's", *Probability and Mathematical Physics Seminar*, Department of Mathematics, University of California at Irvine, Irvine, California, March 3, 1998. (Invited Talk).
32. "On the Dynamics of Stochastic Differential Systems", *The Twenty Second European Meeting of Statistician and the Seventh Vilnius Conference on Probability and Mathematical Statistics*, Vilnius, Lithuania, August 13, 1998. (45 minutes Invited Talk).
33. "On the Dynamics of Stochastic Differential Equations, Part I", *Ellis B. Stouffer Colloquium, Department of Mathematics, University of Kansas*, Lawrence, Kansas, October 1, 1998. (Invited Talk).
34. "Dynamics of Stochastic Differential Equations, Part II", *Stochastic Adaptive Control Seminar, Department of Mathematics, University of Kansas*, Lawrence, Kansas, October 2, 1998. (Invited Talk).
35. "Infinite-Dimensional Cocycles and Stochastic Systems with Memory", *1999 Spring Southeastern AMS Sectional Meeting: Special Session on Probability on Algebraic Structures, III*, Gainesville, FL, March 12-13, 1999. (Invited Talk).
36. "The Stable Manifold Theorem for Stochastic Systems with Memory" Probability Seminar, Institut Elie Cartan, Université Henri Poincaré Nancy 1, Nancy, France, June 17, 1999. (Invited Talk).
37. "Stochastic Functional Differential Equations on Manifolds", *Conference on Probability and Geometry*, Institut Elie Cartan Université Henri Poincaré Nancy 1, Nancy, France, September 22, 1999; (40 minutes Invited Talk).

38. “The Dynamics of Stochastic Systems with Memory”, *Mathematics and Statistics Colloquium*, Department of Mathematics and Statistics, Wright State University, Dayton, Ohio, January 7, 2000. (Invited Talk).
39. “The Stable Manifold Theorem for Stochastic Differential Equations”, *International Conference on Stochastic Analysis and Harmonic Analysis*, Northwestern University, Evanston, Illinois, June 26-30, 2000 (30 minutes Invited Talk)
40. “Stochastic Systems with Memory: Theory, Examples and Applications I,II,III,” *El Postgrado en Matematica de la Facultad de Ciencias*, Universidad Central de Venezuela, Caracas, Venezuela, July 7, 12, 14, 2000 (Series of three one-hour invited talks).
41. “The Stable Manifold Theorem for SDE’s I,II”, “Stochastic Functional Differential Equations with Constraints”, *Oslo Summer Workshop on Stochastic Analysis*, Oslo, Norway, August 11-14, 2000, (Main speaker: 3 one-hour invited talks).
42. “Stochastic Dynamics of Infinite-Dimensional Systems”, *Stochastic and Non-linear Analysis Seminar*, Department of Mathematics, University of Illinois at Urbana-Champaign, Urbana-Champaign, Illinois, September 19, 2000 (one-hour invited talk).
43. “SFDE’s as Dynamical Systems I,II”, *Session on Stochastic Functional Differential Equations*, Mathematics Research Centre, University of Warwick, Coventry, UK, November 10-11, 2000 (Main speaker: two one-hour invited talks).
44. “Stochastic Dynamics of Systems with Memory”, *Stochastic Analysis Seminar*, Mathematical Institute, University of Oxford, Oxford, England, December 4, 2000 (one-hour invited talk).
45. “Numerics of Stochastic Systems with Memory”, *Applied Mathematics and Numerical Analysis Seminars*, Department of Mathematics, University of Manchester, Manchester, England, March 14, 2001 (one-hour invited talk).
46. “The Stable Manifold Theorem for Stochastic Differential Equations”, *Analysis and Probability Seminar*, Department of Mathematics, University of Hull, Hull, England, March 15, 2001 (one-hour invited talk).
47. “The Stable Manifold Theorem for Stochastic Differential Equations”, *Dynamical Systems and Probability Seminars*, Department of Mathematical Sciences, Loughborough University, Loughborough, England, March 16, 2001 (one-hour invited talk).
48. “Numerics of Stochastic Systems with Memory” *Applied Mathematics Colloquium*, Department of Applied Mathematics, Illinois Institute of Technology, Chicago, Illinois, October 18, 2001 (one-hour invited talk).

49. “The Stable Manifold Theorem for Stochastic Differential Equations”, *Mathematics Colloquium*, Department of Mathematics, University of North Carolina at Charlotte, Charlotte, North Carolina, March 15, 2002 (one-hour invited talk).
50. “Semiflows for Semilinear Stochastic Partial Differential Equations”, *Probabilistic Methods in Fluids*, Mathematics Department, University of Wales, Swansea, UK, April 16, 2002 (40 minutes invited talk).
51. “The Stable Manifold Theorem for Stochastic Differential Equations”, *Mathematics Colloquium*, School of Mathematics, University of Minnesota, Minneapolis, Minnesota, April 25, 2002 (one-hour invited talk).
52. “Stochastic Dynamics of Infinite-Dimensional Systems”, *Probability Seminar*, School of Mathematics, University of Minnesota, Minneapolis, Minnesota, April 26, 2002 (one-hour invited talk).
53. “Stochastic Functional Differential Equations, I,II,III ” *Instituto de Matematica, Estatística e Computação Científica*, UNICAMP - IMECC (University of Campinas), Campinas, Brazil, June 25, 26, 27, 2002 (Mini-course of three one-hour invited talks-supported by FAPESP, Sao Paulo State Research Foundation).
54. “The Milstein Scheme for Stochastic Delay Equations”, Workshop on Stochastic Computation, *International Conference on Foundations of Computational Mathematics*, Institute for Mathematics and its Applications (IMA), University of Minnesota, Minneapolis, Minnesota, August 5-14, 2002 (50 minutes invited talk).
55. “Semiflows for Semilinear Stochastic Partial Differential Equations”, *Stochastic and Non-linear Analysis Seminar*, Department of Mathematics, University of Illinois at Urbana-Champaign, Urbana-Champaign, Illinois, October 22, 2002 (one-hour invited talk).
56. “Stochastic Systems with memory, I,II,III,IV ” *Berlin Spring School on Stochastic Delay Differential Equations*, Humboldt University, Berlin, Germany, March 11-15, 2003 (Main speaker: Mini-course of four $1\frac{1}{2}$ -hour invited talks).
57. “The Stable Manifold Theorem for Semilinear Stochastic Partial Differential Equations”, *Stochastics Seminar*, Department of Mathematics, University of Kaiserslautern, Kaiserslautern, Germany, June 24, 2003 (one-hour invited talk).
58. “The Stable Manifold Theorem for Semilinear Stochastic Partial Differential Equations”, Berliner Kolloquium Wahrscheinlichkeitstheorie (AG Stochastik der TU, AG Stochastik der HU, FG Stoch. Systeme des WIAS), Humboldt University, Berlin, Germany, July 16, 2003 (one-hour invited talk).
59. “The Stable Manifold Theorem for Semilinear Stochastic Partial Differential Equations”, *Workshop on Probability and Partial Differential Equations in Modern Applied Mathematics*, IMA, Minneapolis, Minnesota, July 21-August 1, 2003 (one-hour invited talk).

60. “The Stable Manifold Theorem for Semilinear Stochastic Partial Differential Equations”, *International Workshop on Stochastic Partial Differential Equations and Related Topics*, Mathematics Research Centre, University of Warwick, UK, 4th - 15th August 2003 (one-hour invited talk).
61. “Stability and Computations for Stochastic Delay-Differential Equations”, Research-in-Teams, Banff International Research Station, Pacific Institute for Mathematical Sciences Banff, Canada, July 24 - August 7, 2004
62. “Dynamics of Semilinear Stochastic Partial Differential Equations”, *Distinguished Lecture Series*, Department of Mathematics, University of Wyoming, Wyoming, April 15, 2004 (one-hour invited talk).
63. “Dynamics of Semilinear Stochastic PDE’s”, *Guest Lecture*, Centre of Mathematics for Applications (CMA), Department of Mathematics, University of Oslo, Oslo, Norway, September 20, 2004 (one-hour invited talk).
64. “The Weak Euler Scheme for Stochastic Delay Equations”, *East Midlands Stochastic Analysis Seminar* (sponsored by the London Mathematical Society), Loughborough University, Loughborough, UK, May 9, 2005 (one-hour invited talk).
65. “Dynamics of Semilinear Stochastic Partial Differential Equations”, *International Conference on Mathematical Analysis and its Applications*, Assiut University, Egypt, January 4, 2006 (<http://icmaa06.etms-web.org/>) (sponsored by the IMU)(Invited Plenary Address).
66. “A delayed Black-Scholes formula”, *First African-Swedish Conference*, Younde, Cameroon, September 14-16, 2006, (sponsored by *International Science Program*, University of Uppsala, Sweden.)
67. “Random Dynamics”, *2006 Outstanding Scholar Public Lecture*, Southern Illinois University Carbondale, Illinois, November 7, 2006. The public lecture may be viewed at (<http://sfde.math.siu.edu/publiclecture2.1.pdf>)
68. “Anticipating Semilinear SPDE’s”, International Conference *Modern Perspectives in Real and Stochastic Analysis*, Kaiserslautern, Germany, April 2-5, 2007 (sponsored by DFG) (one-hour invited plenary talk).
69. “Anticipating Semilinear SPDE’s”, International Conference *Stochastic Analysis, Stochastic Differential Geometry and Applications*, British Mathematical Colloquium, University of Wales, Swansea, April 19, 2007 (sponsored by EPSRC, UK) (one-hour invited plenary talk).
70. “Weak Euler Scheme for Stochastic Delay Equations”, Real and Stochastic Analysis Seminar, Department of Mathematics, University of Kaiserslautern, July 3, 2007 (one-hour invited talk).
71. “The Weak Euler Scheme for Stochastic Delay Equations”, Berliner Kolloquium Wahrscheinlichkeitstheorie (AG Stochastik der TU, AG Stochastik der HU, FG Stoch. Systeme des WIAS) Wierestrass Institute, Berlin, Germany, July 11, 2007 (one-hour invited talk).

72. “The Substitution Theorem for Semilinear SPDE’s”, *International Conference “Skorohod Space. 50 years on”*, Ukrainian Academy of Sciences, Kiev, Ukraine, June 22, 2007 (<http://www.imath.kiev.ua/>) (one-hour invited plenary talk).
73. “The Substitution Theorem for Semilinear SPDE’s”, Mittag-Leffler Institute Workshop I: Stochastic PDE’s, September 11, 2007 (invited talk). A pdf file of the talk is available at <http://www.mittag-leffler.se/programs/0708f/>
74. “Semilinear SPDEs as Dynamical Systems”, Mittag-Leffler Institute Seminar, September 25, 2007 (one-hour invited talk). A pdf file of the talk is available at <http://www.mittag-leffler.se/programs/0708f/>
75. “A Delayed Black-Scholes Formula”, Probability Seminar, School of Mathematics, University of Manchester, UK, November 14, 2007 (one-hour invited talk).
76. “A Delayed Option-pricing Formula”, Mittag-Leffler Institute Workshop II, November 20, 2007 (invited talk). A pdf file of the talk is available at <http://www.mittag-leffler.se/programs/0708f/>
77. “Numerics of Stochastic Systems with Memory”, Mittag-Leffler Institute Seminar, December 13, 2007 (one-hour invited talk).
78. **“Random Dynamics and Memory”, David Blackwell Lecture, Mathematical Association of America MathFest 2008, Madison, WI, August 1, 2008, (Invited MAA Address).**
79. “Semilinear SPDEs as Dynamical Systems”, Department of Mathematics and Statistics, University of North Florida, Jacksonville, Florida, January 8, 2009 (one hour invited talk).
80. “Ergodic theory of Burgers equation with noise”, *International Conference on Stochastic Analysis and Random Dynamical Systems* (devoted to the one-hundredth anniversary of N.N. Bogoliubov), sponsored by Institute of Mathematics, National Academy of Sciences of Ukraine, (**one-hour invited plenary talk**), Lviv, Ukraine, June 14-20, 2009.
<http://www.imath.kiev.ua/~sard/il.htm>
81. “Dynamics of stochastic 2D Navier-Stokes equations”, *International Conference on Stochastic Differential Equations, Stochastic Partial Differential Equations and Related Topics*, University of Manchester, Manchester, UK, August 24-28, 2009 (invited talk).
82. “Burgers Equation with Affine Noise”, *Opening Workshop: Program on Stochastic Partial Differential Equations*, Isaac Newton Institute for Mathematical Sciences, University of Cambridge, Cambridge, UK, January 8, 2010 (one hour invited talk).
Streaming video of talk:
<http://www.newton.ac.uk/programmes/SPD/seminars/010815301.html>
Pdf file of talk:
<http://www.newton.ac.uk/programmes/SPD/seminars/010815301.pdf>

83. “Dynamics of 2D Stochastic Navier Stokes Equations”, Stochastic Analysis Seminar, School of Mathematics, Loughborough University, Loughborough, UK, 17 Feb 2010 (one hour invited talk).
84. “Linear Stochastic Partial Differential Equations”, SPDE Program, Isaac Newton Institute University of Cambridge, Cambridge, UK, March 4, 2010 (one hour invited talk).
Pdf file of talk:
<http://www.newton.ac.uk/programmes/SPD/seminars/030411001.pdf>
85. “Dynamics of semilinear stochastic partial differential equations”, Department of Applied Mathematics, School of Mathematics, University of Leeds, April 26, 2010 (one hour invited talk).
<http://www.maths.leeds.ac.uk/applied/seminars.dir/>.
86. “Invariant Manifolds for the Stochastic Navier-Stokes Equation”, Mathematics Institute, University of Warwick, Coventry, UK, May 4, 2010 (one hour invited talk).
87. “Invariant Manifolds for the Stochastic Navier-Stokes Equation”, Satellite conference to the SPDE program at Isaac Newton Institute, University of York, York, UK, May 31-June 4, 2010 (one hour invited talk).
<http://www.newton.ac.uk/programmes/SPD/spdw03.html>
88. “Invariant Manifolds for Stochastic 2D Navier-Stokes Equation”, Recent Advances in the Numerical Approximation of Stochastic Partial Differential Equations, NSF/CMBS Regional Conference in the Mathematical Sciences, Illinois Institute of Technology, Chicago, Illinois, August 11, 2010 (one hour invited talk).
<http://math.iit.edu/spde2010/program.html>
89. “Invariant manifolds for stochastic models in fluid dynamics”, IMPACT-Workshop in honour of Peter Imkeller’s 60th birthday, Humboldt University-Berlin, February 24, 2011 (invited talk).
<http://www.math.hu-berlin.de/heinc/impact/talks/Mohammed.pdf>
90. “Stochastic Dynamics of Fluid Models”, International Conference on Malliavin Calculus and Stochastic Analysis in Honor of David Nualart, University of Kansas, Lawrence, Kansas, March 19, 2011 (invited talk).
91. “Linear SPDE’s”, Department of Mathematics, Technical University of Kaiserslautern, July 12, 2011 (invited talk).
92. “Ergodic Theory of Stochastic 2D Navier-Stokes Equations”, Department of Mathematics, University of Paderborn, Paderborn, Germany, June 7, 2011 (invited talk).
93. “Linear SPDE’s”, Stochastic Analysis Seminar, Technical University of Berlin, July 26, 2011 (invited talk).
94. “SPDE’s with Random Initial Conditions”, Workshop on Random Dynamical Systems, Department of Aerospace Engineering, University of Illinois at Urban-Champaign, November 8, 2011 (invited talk).

95. “Linear SPDE’s”, Stochastic Analysis Seminar, Centre of Mathematics for Applications (CMA), University of Oslo, Norway, March 14, 2012 (invited talk).
96. “Stochastic Dynamics of Fluid Models”, November 16, 2012 (Probability Seminar, School of Mathematics, University of Minnesota, Minneapolis, MN) (invited talk).
97. “Sobolev Differentiable Flows for Singular Stochastic Differential Equations”, November 20, 2012, (Dynamical Systems Seminar, IMA, University of Minnesota, Minneapolis, MN) (invited talk).
98. “Stochastic Dynamics of Fluid Models”, January 17, 2013, Colloquium, Department of Mathematics, SIU-C, Carbondale, Illinois.
99. “Sobolev Differentiable Flows for Singular Stochastic Differential Equations”, April 5, 2013, (Probability Seminar, Department of Mathematics, University of Rochester, Rochester, NY) (one-hour invited talk).
100. “Singular Stochastic Dynamics”, October 7, 2013, Week on Stochastic Dynamics, Dynamics Beyond Uniform Hyperbolicity, IMPA, Rio de Janeiro, Brazil (one-hour invited talk).
101. “Sobolev Differentiable Flows for Singular SDEs”, March 25, 2014, Mathematics Department, Brigham Young University, Provo, Utah (one-hour invited talk).
102. “Stochastic Dynamics of Singular Stochastic Differential Equations”, September 12, 2014, *Workshop on Stochastics and Dynamics on the occasion of Michael Scheutzow’s 60th birthday*, Technical University of Berlin, Berlin, Germany (invited talk).
103. “Dynamics of Singular SDEs”, Probability Seminar, Division of Applied Mathematics, Brown University March 17, 2015, Providence, RI (one hour invited talk).

VII. RESEARCH

- A. Research Interests and Specialties: Global Analysis, Qualitative Theory of Functional Differential Equations (on Manifolds), Theory of Stochastic Ordinary and Functional Differential Equations, Malliavin Calculus, Boundary-value Problems, Stochastic partial differential equations.
- B. Current Research Projects:
 1. Lyapunov Exponents and stochastic flows for Stochastic non-linear Hereditary Systems with finite or infinite memory.
 2. The Malliavin Calculus of Stochastic Hereditary Systems.
 3. Hypocoellipticity of Degenerate Partial Differential Operators.
 4. Theory of Stochastic Functional Differential Equations on Manifolds (long-term project).
 5. Stochastic Flows for Stochastic P.D.E.’s (long-term project).

6. Probabilistic treatment of Degenerate Boundary-value Problems (long-term project).
7. Finite and Infinite-Dimensional Stochastic Dynamical Systems (long-term project).

C. Research Grants Received:

1. British Science and Engineering Research Council Fellowship, (September 1981-September 1982).
2. British Council Visiting Fellowship, Mathematics Research Centre, University of Warwick, England (1982-1987).
3. Visiting Fellowship at NSF Institute of Mathematics and its Applications, Minneapolis, University of Minnesota (January-May 1986).
4. Summer Research Fellowship, SIU, July 1986.
5. Alexander von Humboldt-Stiftung Fellowship (1987, six months).
6. NATO Collaborative Research Grant (1988-1990).
7. Alexander von Humboldt-Stiftung Fellowship (July-August 1989)
8. NSF Research Grant DMS-8907857: “Lyapunov Exponents and Stable Manifolds for Stochastic Delay Systems” (July 1989-June 1992).
9. NATO Collaborative Research Grant (with M. Scheutzow) (1991-1994).
10. NSF Research Grant DMS-9206875: “Stochastic Hereditary Systems” (July 1992 - June 1995).
11. Alexander von Humboldt-Stiftung Fellowship (June-July 1994)
12. NSF Research Grant DMS-9503702: “Degenerate SDE’s and PDE’s ” (June 1995 - June 1997).
13. NSF Research Grant DMS-9703596: “Degenerate Stochastic Systems and Related Problems in Analysis” (July 1997 - June 2001).
14. NSF Research Grant DMS-9980209: (**Career Advancement Award**) “Aspects of Stochastic Differential Geometry in Function Space” (June 2000 - June 2002).
15. NSF Research Grant DMS-0203368: (**Five-year Research Award**) “Finite and Infinite-Dimensional Stochastic Dynamical Systems” (June 2002-June 2008). Supplemental award: February 18, 2004-May 31, 2008. (\$226,534)
16. Alexander von Humboldt-Stiftung Research Fellowship (June-August 2003).
17. NSF Research Grant DMS-0705970: (**Five-year Research Award**) “Stochastic Dynamical Systems in Finite and Infinite-Dimensions” (June 2007 - June 2013) (\$260,000).
18. NSF Research Grant DMS-1463964: “Stochastic Dynamics: Finite and Infinite Dimensional” (September 2015-September 2018) (\$180,000).
19. Alexander von Humboldt-Stiftung Research Fellowship, Germany (8/1/16–11/1/16).

D. Awards:

1. *Shell Prize*, Khartoum University, 1967,1968,1969, (shared with S.A. Elsanousi).
2. *Khartoum University Prize* (1970) for best B.Sc.honors degree results, (with S.A. Elsanousi).
3. *Graduate Scholarship* (1971-1976) granted by University of Khartoum to study for M.Sc. and Ph.D. in Britain, 1971-1976.
4. British Science and Engineering Research Council (SERC) Fellowship, (September 1981-September 1982).
5. British Council Visiting Research Fellowship, Mathematics Research Centre, University of Warwick, England (1982-1987).
6. Visiting Research Fellowship at NSF Institute of Mathematics and its Applications, Minneapolis, University of Minnesota (January-May 1986).
7. Summer Research Fellowship, SIU-C, July 1986.
8. Alexander von Humboldt-Stiftung Fellowship (1987, six months).
9. NATO Collaborative Research Grant (1988-1990).
10. Alexander von Humboldt Fellowship (July-August 1989, June-July 1994, June 15-August 15, 2003).
11. NSF Research Award DMS-8907857: “Lyapunov Exponents and Stable Manifolds for Stochastic Delay Systems.” (July 1989-June 1992)
12. NATO Collaborative Research Grant (with M. Scheutzow) (1991-1994).
13. NSF Research Award DMS-9206875: “Stochastic Hereditary Systems” (July 1992 - June 1995)
14. Nominated for King Faisal International Prize in Science (Mathematics) for 1986 and 1994 (total value 350,000*S.R.* = \$100,000) by Professor L. Markus, Control Theory Center, University of Minnesota, Minneapolis, (1986), Professor J. Guyon, President, SIUC, (1994), and Professor J. Jackson, Vice-President for Academic Affairs, SIU-C (1997).
15. NSF Research Award DMS-9503702: “Degenerate SDE’s and PDE’s ” (June 1995 - June 1997)
16. **Research Professorship, Mathematical Sciences Research Institute (MSRI), Berkeley, California (1997–1998).**
17. NSF Research Award DMS-9703596: “Degenerate Stochastic Systems and Related Problems in Analysis” (July 1997 - June 2001).
18. NSF Research Award DMS-9980209: (**Career Advancement Award**) “Aspects of Stochastic Differential Geometry in Function Space” (June 2000 - June 2002).
19. NSF Research Award DMS-0203368: “Finite and Infinite-Dimensional Stochastic Dynamical Systems” (June 2002-June 2008). Supplemental award: February 18, 2004-May 31, 2008 (\$226,534).

20. SIU-C College of Science Outstanding Researcher (2005).
21. SIU-C Outstanding Scholar (2006).
22. **Visiting Fellowship, Institut Mittag-Leffler, Royal Swedish Academy of Sciences, Stockholm, Sweden (September 1-December 15, 2007).**
23. NSF Research Award DMS-0705970: “Stochastic Dynamical Systems in Finite and Infinite-Dimensions” (June 2007 - June 2013) (\$260,000).
24. MAA Invited Address, David Blackwell Lecture, Mathematical Association of America MathFest 2008, Madison, WI, August 1, 2008.
25. **Visiting Fellowship, Isaac Newton Institute for Mathematical Sciences, University of Cambridge, UK (January-July, 2010).**
26. **Visiting Fellowship, Clare Hall, University of Cambridge, UK (January-July, 2010).**
27. Life Membership, Clare Hall College, University of Cambridge, Cambridge, UK (October 2010-).
28. Alexander von Humboldt-Stiftung Research Fellowship, Germany (5/15/11–8/15/11).
29. Invited Visiting Research Professor, Centre of Mathematics for Applications (CMA), University of Oslo, Norway (1/1/12–6/30/12).
30. Invited Visiting Research Fellow, Institute of Mathematics and Applications (IMA), University of Minnesota, Minneapolis, MN (9/10/12–12/10/12).

VIII. PUBLICATIONS

A. Books: (Research Monographs)

1. *Retarded Functional Differential Equations: A Global Point of View*, Research Notes in Mathematics No. 21, Pitman Publishing Ltd., London-San Francisco-Melbourne (1978), pp. 147.
2. *Stochastic Functional Differential Equations*, Research Notes in Mathematics No. 99, Pitman Books Ltd., London (1984), pp. 245.
3. *Stochastic Differential Systems with Memory*, Stochastic Modeling and Applied Probability, Springer-Verlag, pp. 246. (accepted)

B. Articles in Professional Journals:

1. “Separation of Variables: An Abstract Approach”, *Proceedings of the Royal Society of Edinburgh(A)*, 72, 5 (1972–1973), 57–78.
2. “Markov Solutions of Stochastic Functional Differential Equations”, *Proceedings of the Second International Conference on Functional – Differential Systems and Related Topics* (May 1981), Ed. M. Kisielewicz, Polish Academy of Sciences (1981).

3. “The Infinitesimal Generator of a Stochastic Functional Differential Equation”, *Springer Lecture Notes in Mathematics*, 964, Springer–Verlag, Berlin–Heidelberg–New York (1982), 529–538.
4. “Almost Surely Non-linear Solutions of Stochastic Linear Delay Equations”, *Springer Lecture Notes in Mathematics* 1151, Springer-Verlag (1985), pp. 270–275.
5. “Stability of Linear Delay Equations under a Small Noise,” *Proceedings of the Edinburgh Mathematical Society*, 29, (1986), 233–254 .
6. “Hyperbolic State Space Decomposition for a Linear Stochastic Delay Equation” (with M. Scheutzow and H.V. Weizsacker), *SIAM Journal on Control and Optimization* 24–3, (1986), 543–551.
7. “Non-Linear Flows for Linear Stochastic Delay Equations,” *Stochastics* Vol. 17 #3, (1987), 207–212.
8. “Unstable Invariant Distributions for a Class of Stochastic Delay Equations,” *Proceedings of Edinburgh Mathematical Society*, 31, (1988), 1–23.
9. “On the Solution of Stochastic Ordinary Differential Equations via Small Delays” (with D. R. Bell), *Stochastics* Vol. 28, No. 4, (1989), 293–299 .
10. “Lyapunov Exponents and Stationary Solutions for Affine Stochastic Delay Equations” (with M. Scheutzow), pp. 39, *Stochastics and Stochastic Reports*, Vol. 29, No. 2 (1990), 259–283.
11. “The Lyapunov Spectrum and Stable Manifolds for Stochastic Linear Delay Equations,” I.M.A. Series #323, pp. 57, *Stochastics and Stochastic Reports*, Vol. 29 (1990), 89–131.
12. “The Malliavin Calculus and Stochastic Delay Equations,” (with D.R. Bell), *Journal of Functional Analysis*, Vol. 99, No. 1 (1991), 75–99.
13. “Regularity of Stochastic Delay Equations Under p th Order Degeneracy,” (with D.R. Bell), Research Report #90–96, Department of Mathematics, Carnegie Mellon University, November 1990.
14. “Lyapunov Exponents and Stochastic Flows of Linear and Affine Hereditary Systems,” *Diffusion Processes and Related Problems in Analysis*, Vol. II, edited by Mark Pinsky and Volker Wihstutz, Birkhauser – (1992), 141–169.
15. “Opérateurs Paraboliques Hypoelliptiques Avec Dégénérescences Exponentielles,” (with Denis Bell) *C.R. Acad. Sci. Paris (French Academy of Sciences)*, t. 317, S’erie I, (1993), 1059–1064 .
16. “Degenerate Stochastic Differential Equations, Flows and Hypoellipticity,” (with Denis Bell) (Invited Paper), AMS Summer Research Institute on Stochastic Analysis, Ithaca, Cornell 1993, *Proceedings of Symposia in Pure Mathematics, American Mathematical Society*, Vol. 57, Stochastic Analysis, American Mathematical Society, Providence, Rhode Island (1995), 553–564.

17. "An Extension of Hörmander's Theorem for Infinitely Degenerate Second-Order Operators," (with Denis Bell), *Duke Mathematical Journal*, Vol.78, No. 3, (1995), 453-475.
18. "Smooth Densities for Degenerate Stochastic Delay Equations with Hereditary Drift" (with Denis Bell), *The Annals of Probability*, Vol. 23, No. 4, (1995), 1875-1894.
19. "Lyapunov Exponents of Linear and Stochastic Functional Differential Equations Driven by Semimartingales, Part I: The Multiplicative Ergodic Theory (with M. Scheutzow), *Annals of Institute of Henri Poincare*, Vol. 32, 1, (1996), 69-105.
20. "Lyapunov Exponents of Linear Stochastic Functional Differential Equations, Part II: Examples and Case Studies" (With M. Scheutzow), *The Annals of Probability*, Vol. 25, No. 3, (1997), 1210-1240.
21. "Spatial Estimates for Stochastic Flows in Euclidean Space" (With M. Scheutzow), *The Annals of Probability*, Vol. 26, No. 1, (1998), 56-77.
22. "Stochastic Differential Systems with Memory: Theory, Examples and Applications", *Proceedings of the Sixth Workshop on Stochastic Analysis*, (Geilo, Norway, July 28-August 4, 1996), *Stochastic Analysis and Related Topics VI. The Geilo Workshop, 1996*, ed. L. Decreusefond, Jon Gjerde, B. Oksendal, A.S. Ustunel, Progress in Probability, Birkhäuser (1998), 1-77.
23. "The Stable Manifold Theorem for Stochastic Differential Equations" (With M. Scheutzow), *The Annals of Probability*, Vol. 27, No. 2, (1999), 615-652.
24. "The Dirichlet problem for superdegenerate differential operators" (with Denis Bell), *C.R. Acad. Sci. Paris (French Academy of Sciences)*, t. 327, série I, (1998), 81 - 86.
25. "Stochastic Functional Differential Equations on Manifolds" (with R. Léandre), *Probability Theory and Related Fields* 121 (2001) 1, 117-135.
26. "The Stable Manifold Theorem for Nonlinear Stochastic Systems with Memory. I: Existence of the Semiflow." (With M. Scheutzow), *Journal of Functional Analysis*, 205, (2003), 271-305.
27. "The Stable Manifold Theorem for Nonlinear Stochastic Systems with Memory. II: The Local Stable Manifold Theorem." (With M. Scheutzow), *Journal of Functional Analysis*, 206, (2004), 253-306.
28. "Numerical Solution of Stochastic Differential Systems with Memory" (with Yaozhong Hu and Feng Yan), pp. 71 (preprint) (<http://sfde.math.siu.edu/recentpub.html>)
29. "Discrete-time Approximations of Stochastic Delay Equations: The Milstein Scheme" (with Y. Hu and F. Yan), *The Annals of Probability*, 2004, Vol. 32, No. 1A, 265-314.
30. "Absolute Continuity of Stationary Measure-valued Processes Generated by Stochastic Equations with Interaction" (with A. Pilipenko), *Theory of Stochastic Processes*, 2005, vol. 11(27), No.1-2, pp. 17.

31. “A Stochastic Calculus for Systems with Memory” (with F. Yan), *Journal of Stochastic Analysis and Applications*, 2005, vol. 23, no. 3, 613-657.
32. “Large Deviations for Stochastic Systems with Memory” (with T. S. Zhang), *Discrete and Continuous Dynamical Systems-Series B*, vol. 6, no. 4, (2006), 881-893.
33. “Hartman-Grobman Theorems along Hyperbolic Stationary Trajectories” (with E. A. Coayla-Teran and P. R. C. Ruffino), *Discrete and Continuous Dynamical Systems*, vol. 17, no. 2 (2007), 281-292.
34. “A delayed Black-Scholes formula” (with M. Arriojas, Y. Hu and Y. Pap), *Journal of Stochastic Analysis and Applications*, vol. 25, no. 2 (2007), 471 - 492.
35. “The stable manifold theorem for semilinear stochastic evolution equations and stochastic partial differential equations: Part 1, Flows and stationary solutions; Part 2, Existence of stable and unstable manifolds” (with H. Zhao and T. S. Zhang), *Memoirs of the American Mathematical Society*, Vol. 196, (2008), pp. 105.
36. “The substitution theorem for semilinear stochastic partial differential equations” (with T. S. Zhang), *Journal of Functional Analysis*, vol. 253, no. 1, (2007), 122-157.
37. “Stochastic dynamical systems in infinite dimensions”, *Trends in Stochastic Analysis*, edited by Jochen Blath, Peter Mörters and Michael Scheutzow, London Mathematical Society Lecture Note Series #353, Cambridge University Press, (2009), 249-282.
38. “The weak Euler scheme for stochastic delay equations” (with E. Buckwar, R. Kuske and T. Shardlow), *London Mathematical Society Journal of Computation and Mathematics*, 11, (2008), 60-99.
39. “Anticipating stochastic differential systems with memory” (with T. S. Zhang) *Stochastic Processes and Their Applications*, vol. 119, no. 9, (2009), 2773-2802.
40. “Dynamics of stochastic 2D Navier-Stokes equations”, (with T.S. Zhang), *Journal of Functional Analysis* 258 (2010), 3543-3591, pp. 48 (communicated by P. Malliavin).
41. “Invariant manifolds for stochastic models in fluid dynamics”, *Stochastics and Dynamics (SD)*, Volume: 11, Issues: 2-3 (2011), pp. 439-459.
42. “Stochastic delay equations and inclusions with mean derivatives on Riemannian manifolds” (with Y. E. Gliklikh), *Global and Stochastic Analysis*, Vol. 1, No. 1, (2011), pp. 47-54.
43. “Stochastic delay equations and inclusions with mean derivatives on Riemannian manifolds II” (with Y. E. Gliklikh), *Global and Stochastic Analysis*, Vol. 2, No. 1, (2012), pp. 11.

44. “Burgers equation with affine linear noise: Dynamics and stability”, (with T.S. Zhang), *Stochastic Processes and Their Applications*, Volume 122, Issue 4, (2012), 1887- 1916.
45. “Stochastic Burgers Equation with Random Initial Conditions” (with T.S. Zhang), *SIAM Journal of Mathematical Analysis*, 45(4), (2013), 2396-2420.
46. “Anticipating Stochastic 2D Navier-Stokes Equations” (with T.S. Zhang), *Journal of Functional Analysis*, vol. 264, no. 6, (2013),1380-1408.
47. “Sobolev differentiable stochastic flows for SDEs with singular coefficients: Applications to the transport equation”(with T. Nilssen and F. Proske), *The Annals of Probability*, Volume 43, Number 3 (2015), 1535-1576.
48. “A stochastic delay model for pricing debt and equity: Numerical techniques and applications” (with A. Tambue and E. Kemajou-Brown), *Communications in Nonlinear Science and Numerical Simulation*, Volume 20, Issue 1 (2015), 281-297.
49. “Optimal control of systems with noisy memory and BSDEs with Malliavin derivatives ” (with B. Øksendal, E. E. Rose and K. R. Dahl), *Journal of Functional Analysis*, 271, (2016), 289-329.