Curriculum Vitae: Dr Friedemann (Fritz) Solms

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Objective Acceptance for PhD in Computer Science

Citizenship South African and German (RSA ID No: 631017 5157 087)

Family Married to Ellen Lawton Solms with two children, Edwin and Alexander Solms.

Research Interests Model-Driven Development, Architecture, Technology Neutral Design (URDAD)

Degrees

PhD. Theoretical Physics, University of Pretoria
- 1988-1991
- Thesis Topic: *Finite Size effects in Poly-Crystalline high-temperature superconductors*
- Supervisor: Professor Hank Miller

MSc Theoretical Physics, UNISA
- Thesis Topic: *An Improved SCF Iteration Scheme* (67%)
- Supervisor: Dr Piotr Badziag
- Courses: Advanced Solid State Physics (I & II), Advanced Quantum Mechanics, Particle Physics, Quantum Field Theory (Avg: 69%)

BSc Honours, University of Pretoria
- 1985
- Physics

BSc, University of Pretoria
- 1982-1984
- primary subjects (taken to 3rd year level): Mathematics and Physics
- secondary subjects: Applied Mathematics and Chemistry

Additional courses Courses passed for non-degree purposes:
- OMG Advanced UML Certification, 2005
- Psychology 1a and 2a (Rand Afrikaans University, 1994)
- Theoretical Computer Science I & II (UNISA, 1987/8)
- Computer Programming I & II (UNISA, 1987/8)
- Informatics I (1987)
- Syferrekenaar 330 (University of Pretoria, 1984)

Bursaries Bursaries received:
- Foundation of Research and Development, 1990-1992
- Pretoria Portlans Cement, 1982-1984

Journal Papers Publications in refereed scientific journals:
- Fritz Solms and Dawid Loubser, URDAD as a semi-formal approach to analysis and design, Journal Innovations in Systems and Software Engineering, Springer

London, 1614-5046, 1 January 2010.

- Fritz Solms and Dawid Loubser, Generating MDA's platform independent model using URDAD, Knowledge-Based Systems, vol 22, 174–185, 2009.
- F. Solms and W.-H. Steeb, Distributed Monte Carlo Integration using CORBA and Java, International Journal of Modern Physics C, vol. 9, 903–915, 1998.
- F. Solms, P.G.W. van Rooyen and J.S. Kunicki
- W.-H. Steeb, F. Solms, Tan Kiat Shi and R. Stoop, Cubic Map, Complexity and Ljapunov Exponent, Physica Scripta, vol. 55, 520–522, 1997.
- W.-H. Steeb and F. Solms, Complexity, Chaos and One-Dimensional Maps, South African Journal of Science, vol. 92, 353–354, 1996
- F. Solms, P.G.W. van Rooyen and J.S. Kunicki, Maximum Entropy Performance Analysis of Spread Spectrum Multiple-Access Communications, in Maximum Entropy and Bayesian Methods, pp101–108, Kluwer, Academic Publishers, 1996.
- F. Solms, P.G.W. van Rooyen and J.S. Kunicki, Maximum Entropy and Minimum Relative Entropy in Performance Evaluation of Digital Communication Systems, IEE Proceedings: Communications, vol. 142, no. 5, 250–254, August 1995.
- W.-H. Steeb W-H, F. Solms and K. S. Tan, Genetic Algorithms and Object-Oriented Programming, Int. J. Mod. Phys. C, 853–869, vol. 6, 1995.
- F. Solms, R.M. Quick and H.G. Miller, Finite Size Effe cts and Polycrystalline high-Tc Materials, Physical Review B, Vol 49, 15945-15951, 1994.
- W.-H. Steeb, F. Solms and R. Stoop, Chaotic Systems and Maximum Entropy Formalism, Journal of Physics A, L399–L402, vol. 27, 1994.
- M. Marinus, H.G. Miller, R.M. Quick, F. Solms and D.M. van der Walt, Order Parameter for pairing systems, Physical Review C, vol. 48, 1713–1718, 1993.
- F. Solms, N.J. Davidson, H.G. Miller, R.M. Quick and H.L. Gaigher, BCS and Polycrystalline high-Tc materials, Physics Letters A, vol 170, 84–88, 1992.
- R. Rossignoli, R.M. Quick, H.G. Miller and F.Solms, Correlated finite temperature BCS approximation in finite systems, Physics Letters A, vol 167, 84–88, 1992.
- S.M. Peres, R.M. Quick, N.J. Davidson, H.G. Miller and F. Solms, Reconstruction of the Spin Dependence of One Neutron Transfer Spectroscopic Sums from Incomplete Information, Physical Review C, Vol 45, 870-872, 1992.
- E.D. Malaza, R.A. Ritchie, F. Solms, D.W. von Oertzen and H.G. Miller, Predictions of LEP hadronic multiplicity distributions using the maximum entropy principle, Physics Letters B, vol 266, 169–, 1991.
- F. Solms, H.G. Miller and A. Plastino, Geometric Treatment of Finite Size Effects in Interacting Systems, Physics Letters A, vol 157, 286-289, 1991.
- P. Badziag and F. Solms, An Improved SCF Iteration Scheme, Computers and Chemistry, vol 12, 233–236, 1988.

CONFERENCES

Publications in refereed and non-refereed conference proceedings:

- Fritz Solms and Dawid Loubser, URDAD as a Semi-Formal Approach to Analysis and Design, presented at the International Conference on Formal Engineering Methods, ICFEM'09, Rio de Janeiro,December 2009.
- Fritz Solms, Technology Neutral Business Process Design using URDAD, New Trends in Software Methodologies, Tools and Techniques: Frontiers in Artificial Intelligence and Applications IOS Press, vol 161, 52–70, 2007 .
- F. Solms, E. Smit and Z.J. Nel, A neural network diagnostic tool for the chronic fatigue syndrome, IEEE International Conference on Neural Networks, Washington DC, vol. 2, 778–781, 1996.
- P. van Rooyen and F. Solms, Maximum entropy investigation of the inter user interference distribution in a DS/SSMA system, Personal, Indoor and Mobile Radio Communications, Sixth IEEE International Symposium on Wireless: Merging onto the Information Superhighway, 1308–, 1995.

- F. SOLMS, P.G.W. van Rooyen, J.S. Kunicki, Maximum entropy and performance analysis of spread spectrum multiple access systems, MaxEnt'94, Proceedings of the 14th International Maximum Entropy Workshop, St John's College, Cambridge, England, August 1994.
- F. Solms, R.M. Quick and H.G. Miller, Finite Size Effects in Polycrystalline high-Tc materials, Proceedings of the XVIII International Workshop on Condensed Matter Theories, Valencia, Spain, 6-10 June 1994.
- F. Solms, P. van Rooyen and J. Kunicki, Maximum entropy and average error rates in digital communication systems, COMSIG-94., Proceedings of the 1994 IEEE South African Symposium on Communications and Signal Processing, 11–15, Oct 1994.
- F. Solms, H.G. Miller and A. Plastino, Geometric Treatment of Finite Size Effects in Interacting Systems, Proceedings of the 8'th International Conference on Dynamical Processes in Excited States in Solids, Leiden, The Netherlands, published in Journal Of Luminescence, vol 53, 143–, 1992.
- F. Solms, N.J. Davidson, H.G. Miller, R.M. Quick and H.L. Gaigher, BCS and Polycrystalline high-Tc materials, Proceedings of the 27'th Annual Seminar on Theoretical Physics at the SAIP meeting at Wits, Johannesburg, 1992.
- R.A. Ritchie, F. Solms, D.W. von Oertzen, H.G. Miller and E.D. Malaza, Predictions of LEP hadronic multiplicity distributions using the maximum entropy principle, Proceedings of the 26'th Annual Seminar on Theoretical Physics at the SAIP meeting in Bloemfontein, 1991.
- R.A. Ritchie, F. Solms D.W. von Oertzen, H.G. Miller and E.D. Malaza, The Maximum Entropy Principle Applied to Hadron Multiplicity Distributions, Proceedings of the 17'th South African Symposium on Numerical Mathematics, Umhlanga Rocks, July 1991.

Books

Books published with international publishers:

- Willie-Hans Steeb and Fritz Solms, Applications of C++ Programming, World Scientific Press, Singapore, 1995, ISBN 981-02-2313-7 - reprinted in 2000.

Patents

Co-owner of the following patent:

- SA Patent Application No. 95/3147, "The Determination of Individual Gas Concentrations", Friedemann (Fritz) Solms and Campbell John Cairns, filed 19 April 1995

Invited Speaker

Selected invites as guest speaker at conferences and meetings:

- Enterprise Architecture in the Context of a Services Oriented Enterprise, Enterprise Architecture Practitioners Conference, Gallagher Estates, 1-2 September 2009.
- Enterprise Architecture, Meeting of the International Institute of Business Analysts, JSE, 16 September 2008.

Courses Developed & Presented

Applied Mathematics courses

- Information Theory and Maximum Entropy Inference
- Neural Networks and Fuzzy Logic
- Numerical methods with applications in C++ (second year)

Architecture and Design courses

- Information Theory and Maximum Entropy Inference
- Neural Networks and Fuzzy Logic
- Numerical methods with applications in C++ (second year)
- Architecture
- Enterprise Architecture

- Object-Oriented Analysis and Design using UML and URDAD
- Design Patterns
- Enterprise Integration

Business Analysis courses
- Business Analysis using UML and URDAD
- Organization Architecture

Technology courses
- Java, Advanced Java, Enterprise Java Beans, Java EE Presentation Layer Development
- XML and Web Services
- Object-Oriented Programming using C++, Object-Oriented Programming using ANSI-C
- Linux

Scientific courses
- Numerical Methods (2nd year level)
- Maximum Entropy Inference (4th year level)
- Neural networks (4th year level)

Employment

Solms Training & Consulting (2000–present)
- Founder and CEO of company
- Focus on organizational and systems architecture, technology neutral design and open standards based IT technologies.
- Training and consulting services for the corporate sector.
- Strong emphasis on research.

IBM South Africa (1999, part-time)
- Trainer in Object-Oriented Technologies (presenting OOAD, Java and C++ courses)

Standard Corporate and Merchant Bank (1998–2000)
- Mathematical modeling of financial instruments, their pricing and risk profiling.
- Software architect, lead designer and developer for the Quantitative Analysis team.
- Pricing and risk analysis with particular focus on the derivatives market.
- Architect of core of trading system which was later used by Standard Bank, Brazil.
- Liason with business and clients.

Rand Afrikaans University (1992–1998)
- Senior lecturer in Applied Mathematics
- Co-founder of the International School for Scientific Development

South African Microelectronic Systems (SAMES) (1988)
- Quality assurance specialist with some limited software development responsibilities.

UNISA (1986/7)
- Research assistent and lead developer of the Solid State Physics research group.

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References