

Sergio L.A. de Queiroz – Curriculum Vitae – September 2021

Date of Birth: 12 August 1951

Citizenship: Brazilian

Brazilian Passport # [withheld].

Valid until [withheld].

I. DEGREES AND APPOINTMENTS

Degrees: B.Sc, M.Sc, D.Sc.

1975-77 – M.Sc. Research Student, PUC, Rio de Janeiro

Supervisor: Belita Koiller

Topics: Electronic Properties of Solids

1977-81 – D.Sc. Research Student, PUC, Rio de Janeiro

Supervisor: C.M. Chaves

Topics: Theory of Phase Transitions and Critical Phenomena

1983-84 – Post-Doctoral Research Assistant, Oxford University, U.K. (financed by CNPq)

Collaborators: R.B. Stinchcombe, P.M. Duxbury, A.L. Stella

Research on Theory of Phase Transitions and Critical Phenomena

1982-86 – Assistant Professor, Department of Physics, PUC, Rio de Janeiro

1982-1988 – CNPq Junior Research Fellow

1986-1994 – Associate Professor, Department of Physics, PUC, Rio de Janeiro

1988-2018 – CNPq Senior Research Fellow

1994-1999 – Full Professor, Institute of Physics, UFF, Niterói, Rio de Janeiro

1999-present – Full Professor, Institute of Physics, UFRJ, Rio de Janeiro

II. TEACHING

Recent and Current Lecture Courses at UFRJ, UFF, and PUC

Phase Transitions and Critical Phenomena (graduate); Solid State Theory (graduate); Statistical Mechanics (graduate); Quantum Mechanics (graduate); Statistical Physics; Basic Quantum Mechanics; Basic Physics (Mechanics, Heat, Electromagnetism, Special Relativity)

III. RESEARCH

Current Research Interests

Percolation and thermal effects in dilute magnets; random fields. Interface models for magnetic domain wall motion (Barkhausen effect). Correlated percolation. Breakdown properties of random networks. θ -point properties of polymers; interacting random walks. Transport properties in disordered systems; quantum percolation. Phase transitions in fractals.

Research associates

Collaboration with R. R. dos Santos and Belita Koiller at UFRJ; F. D. A. Aarão Reis at UFF; R. B. Stinchcombe, J. M. Yeomans at Oxford (U.K.); E. Domany at Weizmann Institute (Israel); D. Stauffer at Cologne (Germany)

Scientific visits

- Dipartimento di Fisica, Università di Padova (Italy) – January 1990 (financed by CNPq/CNR bilateral agreement)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – August 1990/ July 1991 (Sabbatical leave, supported by CNPq)
- Dipartimento di Fisica, Università di Padova (Italy) – January/ February 1992 (financed by CNPq/CNR bilateral agreement)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – February 1992 (financed by SERC (UK))
- Department of Theoretical Physics, University of Oxford (United Kingdom) – January/February 1994 (financed by Brazilian Academy of Sciences and Royal Society (UK))
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 1995/February 1996 (financed by Brazilian Academy of Sciences and Royal Society (UK))
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 1997/March 1998 (financed by CNPq /Royal Society (UK) bilateral agreement)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – January / March 2000 (financed by CNPq /Royal Society (UK) bilateral agreement)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – January / March 2003 (financed by Brazilian Academy of Sciences and Royal Society (UK))
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 2005 / March 2006 (financed by CNPq)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 2007 / March 2008 (financed by CNPq)

- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 2009 / March 2010 (financed by CNPq)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 2010 / November 2011 (sabbatical leave, financed by CAPES)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – January / March 2013 (financed by CNPq)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 2013 / March 2014 (financed by CNPq)
- Department of Theoretical Physics, University of Oxford (United Kingdom) – December 2014 / March 2015 (financed by CNPq)

Published papers

- 1 – “A Cluster-Bethe Lattice Treatment for the F-Center in Alkali-Halides”, S. L. A. de Queiroz, Belita Koiller, B. Maffeo, and H. S. Brandi, *Physica Status Solidi (b)* **87**, 351 (1978)
- 2 – “Remarks on the Percolation Problem in Anisotropic Systems”, C. M. Chaves, P. M. Oliveira, S. L. A. de Queiroz, and R. Riera, *Progress of Theoretical Physics (Kyoto)* **62**, 1550 (1979)
- 3 – “Bond Percolation in a Square Lattice in Presence of a Magnetic Field”, P. M. Oliveira, S. L. A. de Queiroz, C. M. Chaves, and R. Riera, *Journal of Physics A* **13**, 2457 (1980)
- 4 – “A Direct Renormalization-Group Approach for the Excluded Volume Problem”, S. L. A. de Queiroz and C. M. Chaves, *Zeitschrift Fur Physik B* **40**, 99 (1980)
- 5 – “Percolation with First- and Second- Neighbour Bonds: a Renormalization-Group Calculation of Critical Exponents”, R. Riera, P. M. Oliveira, C. M. Chaves, and S. L. A. de Queiroz, *Physical Review B* **22**, 3481 (1980)
- 6 – “Polymer Statistics on a Cayley Tree”, S. L. A. de Queiroz, *Journal of Physics A* **14**, L339 (1981)
- 7 – “Renormalization-Group Study of Fully Directed Self-Avoiding Walks”, S. L. A. de Queiroz, *Journal of Physics A* **16**, L617 (1983)
- 8 – “Scaling and Crossover in the One-Dimensional True Self-Avoiding Walk”, S. L. A. de Queiroz, A. L. Stella, and R. B. Stinchcombe, *Journal of Physics A* **17**, L45 (1984)
- 9 – “Series Study of the One-Dimensional True Self-Avoiding Walk”, A. L. Stella, S. L. A. de Queiroz, P. M. Duxbury, and R. B. Stinchcombe, *Journal of Physics A* **17**, 1903 (1984)
- 10 – “A Comparative Study of Interacting Random Walks”, P. M. Duxbury, S. L. A. de Queiroz, and R. B. Stinchcombe, *Journal of Physics A* **17**, 2113 (1984)

- 11 – “Bootstrap Percolation: a Renormalization-Group Approach”, N. S. Branco, R. R. dos Santos, and S. L. A. de Queiroz, *Journal of Physics C* **17**, L373 (1984)
- 12 – “On the Apparent Failure of a Flory Approximation for Directed Linear Polymers”, S. L. A. de Queiroz, *Journal of Physics A* **17**, L585 (1984)
- 13 – “Dimensional Crossover in Directed Percolation”, Anna Chame, S. L. A. de Queiroz, and R. R. dos Santos, *Journal of Physics A* **17**, L657 (1984)
- 14 – “A Unifying Model of Generalized Random Walks”, P. M. Duxbury and S. L. A. de Queiroz, *Journal of Physics A* **18**, 661 (1985)
- 15 – “Critical Exponents for High-Density and Bootstrap Percolation”, N. S. Branco, S. L. A. de Queiroz, and R. R. dos Santos, *Journal of Physics C* **19**, 1909 (1986)
- 16 – “On Phase Diagrams for Directed Percolation Problems”, Anna Chame, S. L. A. de Queiroz, R. R. dos Santos, and P. M. Oliveira, *Journal of Physics A* **19**, L201 (1986)
- 17 – “Finite-Size Scaling for Branched Polymers on a Bethe Lattice: an Analytical Result”, S. L. A. de Queiroz, *Journal of Physics A* **19**, L433 (1986)
- 18 – “Finite-Size Scaling for Directed Bond Percolation With and Without Cycles on a Triangular Lattice”, Anna Chame, S. L. A. de Queiroz, and R. R. dos Santos, *Journal of Physics A* **19**, L527 (1986)
- 19 – “Low-Temperature Behaviour at the Percolation Threshold for Ising Spins with Correlated Dilution”, N. S. Branco, R. R. dos Santos, and S. L. A. de Queiroz, *Journal of Physics C* **20**, L103 (1987)
- 20 – “A Monte Carlo Analysis of Self-Avoiding Walks in Three Dimensions”, J. M. Pureza, C. A. Aragão de Carvalho, and S. L. A. de Queiroz, *Journal of Physics A* **20**, 4409 (1987)
- 21 – “Finite-Size Electrical Resistivity and Resistance in Fractals”, S.L.A. de Queiroz, *Journal of Physics A* **21**, L107 (1988)
- 22 – “Dilute Ising Antiferromagnet in a Uniform Field on a Square Lattice”, S. L. A. de Queiroz and R. R. dos Santos, *Journal of Physics C* **21**, 1995 (1988)
- 23 – “Phase Diagrams for Correlated Dilution Problems”, N.S. Branco, S.L.A. de Queiroz, and R.R. dos Santos, *Journal of Physics C* **21**, 2463 (1988)
- 24 – “Ising Model with Short-Range Correlated Dilution”, N.S. Branco, S.L.A. de Queiroz, and R.R. dos Santos, *Physical Review B* **38**, 946 (Rapid Communications) (1988)
- 25 – “Coarse-Grained Flory Approximation for a Polymer Chain at the θ -point in Two Dimensions”, S.L.A. de Queiroz, *Physical Review A* **39**, 430 (1989)
- 26 – “A Model for Competition Between ‘Classical’ and ‘Quantum’ Percolation Effects in Disordered Electronic Systems”, J. Pimentel and S.L.A. de Queiroz, *Journal of Physics A* **22**, L345 (1989)

- 27 – “Concentration Anisotropy and Directionality in the Dielectric Breakdown Problem on a Square Lattice”, F.F. Barbosa and S.L.A. de Queiroz, *Journal of Physics: Condensed Matter* **1**, 2771 (1989)
- 28 – “Heisenberg and Ising Spins in Three Dimensions with Site-Bond Correlated Dilution”, N.S. Branco, S.L.A. de Queiroz, and Raimundo R. dos Santos, *Physical Review B* **42**, 458 (1990)
- 29 – “Gap States and Localization Properties of One-Dimensional Fibonacci Quasicrystals”, R.B. Capaz, Belita Koiller, and S.L.A. de Queiroz, *Physical Review B* **42**, 6402 (1990)
- 30 – “Superfluid Transition of ^4He in Fractal Media”, R.R. dos Santos, N.S. Branco, and S.L.A. de Queiroz, *Europhysics Letters* **13**, 647 (1990)
- 31 – “Polymers at the θ Point on Fractals: Results of Flory Approximations”, S.L.A. de Queiroz, Flavio Seno, and Attilio Stella, *Journal de Physique I (Paris)* **1**, 339 (1991)
- 32 – “Universality of Surface Exponents of Self-Avoiding Walks on a Manhattan Lattice”, S.L.A. de Queiroz and J.M. Yeomans, *Journal of Physics A* **24**, 1867 (1991)
- 33 – “Two-Dimensional Diluted Ising Antiferromagnets at Zero Temperature in a Uniform Field: A Growth Simulation Model”, P. M. C. de Oliveira, S. M. Moss de Oliveira, and S. L. A. de Queiroz, *Physica A* **175**, 345 (1991)
- 34 – “Critical Behaviour at the θ Point of Self-Avoiding Walks on a Manhattan Lattice”, S. L. A. de Queiroz and J. M. Yeomans, *Journal of Physics A* **24**, L933 (1991)
- 35 – “Transfer Matrix Scaling for Diluted Ising Systems”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review B* **46**, 6635 (Rapid Communications) (1992)
- 36 – “Transfer Matrix Scaling from Disorder-averaged Correlation Lengths for Diluted Ising Systems”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review B* **50**, 9976 (1994)
- 37 – “Correlation decay and conformal anomaly in the two-dimensional random-bond Ising ferromagnet”, S. L. A. de Queiroz, *Physical Review E* **51**, 1030 (1995)
- 38 – “On the Surface Properties of Two-Dimensional Percolation Clusters”, S. L. A. de Queiroz, *Journal of Physics A* **28**, L363 (1995)
- 39 – “Search for Kosterlitz-Thouless transition in a triangular Ising antiferromagnet with further-neighbour ferromagnetic interactions”, S. L. A. de Queiroz and Eytan Domany, *Physical Review E* **52**, 4768 (1995)
- 40 – “Surface Crossover Exponent for Branched Polymers in Two Dimensions”, S. L. A. de Queiroz, *Journal of Physics A* **28**, 6315 (1995)
- 41 – “Correlation functions in the two-dimensional random-bond Ising model”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review E* **54**, 190 (1996)
- 42 – “Scaling Treatment of the Random-Field Ising Model”, R. B. Stinchcombe, E. D. Moore, and S. L. A. de Queiroz, *Europhysics Letters* **35**, 295 (1996)

- 43 – “Weak vs. strong universality in the two-dimensional random-bond Ising ferromagnet”, F. D. A. Aarão Reis, S. L. A. de Queiroz, and Raimundo R. dos Santos, *Physical Review B* **54**, 9616 (Rapid Communications) (1996)
- 44 – “Domain Scaling and Marginality Breaking in the Random-Field Ising Model”, E. D. Moore, R. B. Stinchcombe, and S. L. A. de Queiroz, *Journal of Physics A* **29**, 7409 (1996)
- 45 – “Logarithmic corrections to gap scaling in random-bond Ising strips”, S. L. A. de Queiroz, *Journal of Physics A* **30**, L443 (1997)
- 46 – “Universality and logarithmic corrections in two-dimensional random Ising ferromagnets”, F. D. A. Aarão Reis, S. L. A. de Queiroz, and Raimundo R. dos Santos, *Physical Review B* **56**, 6013 (1997)
- 47 – “Specific heat singularity in two-dimensional random Ising ferromagnets”, D. Stauffer, F. D. A. Aarão Reis, S. L. A. de Queiroz, and R. R. dos Santos, *International Journal of Modern Physics C* **8**, 1209 (1997)
- 48 – “Connectivity-dependent properties of diluted systems in a transfer-matrix description”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review E* **57**, 6245R (Rapid Communications) (1998)
- 49 – “Field-induced ordering in critical antiferromagnets”. S. L. A. de Queiroz, Thereza Paiva, J. S. S. Martins, and R. R. dos Santos, *Physical Review E* **59**, 2772 (1999)
- 50 – “Domain size effects in Barkhausen noise”, M. Bahiana, Belita Koiller, S. L. A. de Queiroz, J. C. Denardin, and R. L. Sommer, *Physical Review E* **59**, 3884 (1999)
- 51 – “Universality, frustration and conformal invariance in two-dimensional random Ising magnets”, F. D. A. Aarão Reis, S. L. A. de Queiroz, and R. R. dos Santos, *Physical Review B* **60**, 6740 (1999)
- 52 – “Correlation functions in the two-dimensional random-field Ising model”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review E* **60**, 5191 (1999)
- 53 – “Finite-size corrections to scaling in two-dimensional Ising and Potts ferromagnets”, S. L. A. de Queiroz, *Journal of Physics A* **33**, 721 (2000)
- 54 – “Reentrant behaviour and universality in the Anderson transition”, S. L. A. de Queiroz, *Physical Review B* **63**, 214202 (2001)
- 55 – “Correlation functions, free energies and magnetizations in the two-dimensional random-field Ising model”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review E* **64**, 036117 (2001)
- 56 – “Finite driving rates in interface models of Barkhausen noise”, S. L. A. de Queiroz and M. Bahiana, *Physical Review E* **64**, 066127 (2001)
- 57 – “Finite-size investigation of scaling corrections in the square-lattice three-state Potts antiferromagnet”, S.L.A. de Queiroz, *Physical Review E* **65**, 056104 (2002)
- 58 – “Failure of single-parameter scaling of wave functions in Anderson localization”, S.L.A. de Queiroz, *Physical Review B* **66**, 195113 (2002)

- 59 – “Kosterlitz-Thouless transition in three-state mixed Potts ferro-antiferromagnets”, Miguel Quartin and S.L.A. de Queiroz, *Journal of Physics A* **36**, 951 (2003)
- 60 – “Correlation-function distributions at the Nishimori point of two-dimensional Ising spin glasses”, S.L.A. de Queiroz and R.B. Stinchcombe, *Physical Review B* **68**, 144414 (2003)
- 61 – “Dimensional crossover and universal roughness distributions in Barkhausen noise”, S.L.A. de Queiroz, *Physical Review E* **69**, 026126 (2004)
- 62 – “Search for universal roughness distributions in a critical interface model”, S L A de Queiroz, *Physical Review E* **71**, 016134 (2005)
- 63 – “Roughness of time series in a critical interface model”, S L A de Queiroz, *Physical Review E* **72**, 066104 (2005)
- 64 – “Multicritical point of Ising spin glasses on triangular and honeycomb lattices”, S L A de Queiroz, *Physical Review B* **73**, 064410 (2006)
- 65 – “Anomalous dynamics in two- and three- dimensional Heisenberg-Mattis spin glasses”, S L A de Queiroz and R B Stinchcombe, *Physical Review B* **73**, 214421 (2006)
- 66 – “Logarithmic corrections to correlation decay in two-dimensional random-bond Ising systems”, J C Lessa and S L A de Queiroz, *Physical Review E* **74**, 021114 (2006)
- 67 – “Properties of the multicritical point of $\pm J$ Ising spin glasses on the square lattice”, J C Lessa and S L A de Queiroz, *Physical Review B* **74**, 134424 (2006)
- 68 – “Distribution of local Lyapunov exponents in spin-glass dynamics”, S L A de Queiroz and R B Stinchcombe, *Physical Review B* **76**, 184421 (2007)
- 69 – “Wavelet transforms in a critical interface model for Barkhausen noise”, S L A de Queiroz, *Physical Review E* **77**, 021131 (2008)
- 70 – “Quantum diffusion and localization in disordered electronic systems”, P R Wells Jr, J d’Albuquerque e Castro, and S L A de Queiroz, *Physical Review B* **78**, 035102 (2008)
- 71 – “Non-equilibrium processes: driven lattice gases, interface dynamics and quenched disorder effects on density profiles and currents”, S L A de Queiroz and R B Stinchcombe, *Physical Review E* **78**, 031106 (2008)
- 72 – “Location and properties of the multicritical point in the Gaussian and $\pm J$ Ising spin glasses”, S L A de Queiroz, *Physical Review B* **79**, 174408 (2009)
- 73 – “Field-driven transition in an Ising magnet with mixed interactions”, S L A de Queiroz, *Physical Review E* **80**, 041125 (2009)
- 74 – “Finite-size scaling behavior in trapped systems”, S L A de Queiroz, R R dos Santos, and R B Stinchcombe, *Physical Review E* **81**, 051122 (2010)
- 75 – “Smoothly varying hopping rates in driven flow with exclusion”, R B Stinchcombe and S L A de Queiroz, *Physical Review E* **83**, 061113 (2011)

- 76 – “Universal and non-universal amplitude ratios for scaling corrections on Ising strips”, S L A de Queiroz, *Physical Review E* **84**, 031107 (2011)
- 77 – “Scaling behavior of square-lattice Ising model with competing interactions in a uniform field”, S L A de Queiroz, *Physical Review E* **84**, 031132 (2011)
- 78 – “Statistics of current-activity fluctuations in asymmetric flow with exclusion”, R B Stinchcombe and S L A de Queiroz, *Physical Review E* **85**, 041111 (2012)
- 79 – “Current-activity versus local-current fluctuations in driven flow with exclusion”, S L A de Queiroz, *Physical Review E* **86**, 041127 (2012)
- 80 – “Critical line of honeycomb-lattice anisotropic Ising antiferromagnets in a field”, S L A de Queiroz, *Physical Review E* **87**, 024102 (2013)
- 81 – “Driven flow with exclusion and transport in graphene-like structures”, R. B. Stinchcombe, S. L. A. de Queiroz, M. A. G. Cunha, and Belita Koiller, *Physical Review E* **88**, 042133 (2013)
- 82 – “Dynamics of driven flow with exclusion in graphene-like structures”, R. B. Stinchcombe and S. L. A. de Queiroz, *Physical Review E* **91**, 052102 (2015)
- 83 – “Localization and spin transport in honeycomb structures with spin-orbit coupling”, S. L. A. de Queiroz, *Physical Review B* **92**, 205116 (2015)
- 84 – “Domain wall theory and non-stationarity in driven flow with exclusion”, R. B. Stinchcombe and S. L. A. de Queiroz, *Physical Review E* **94**, 012105 (2016)
- 85 – “Driven flow with exclusion and spin-dependent transport in graphenelike structures”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review E* **95**, 042121 (2017)
- 86 – “Dynamical aspects of spontaneous symmetry breaking in driven flow with exclusion”, S. L. A. de Queiroz and R. B. Stinchcombe, *Physical Review E* **100**, 012141 (2019)
- 87 – “Spin-dependent conductance statistics in systems with spin-orbit coupling”, S. L. A. de Queiroz, *European Physical Journal B* **93**, 41 (2020)
- 88 – “Rare-event properties in a classical stochastic model describing the evolution of random unitary circuits”, S. L. A. de Queiroz, *Physical Review E* **104**, 034122 (2021)

Invited conference presentations

- “Disordered Systems” Conference, International Centre for Condensed Matter Physics, Brasilia, Brazil, september 1991
- EPS–IUPAP–IOP Conference on Computational Physics (CCP1998), Granada, Spain, 2/5 september 1998
- 5th International Workshop on Disordered Systems (IWDS5), Maceió, Brazil, 18/22 september 2006
- Workshop: Multicritical Behaviour and Quantum Error Correction (MBQEC), Tokyo, Japan, 17/19 november 2008