

CURRICULUM VITAE

PERSONAL INFORMATION

- Name: Rojas Salinas Hugo Norberto
- Profession: Physicist - Mathematician
- Academic Degree: Doctor es Science, Physics Mention

EDUCATION

- 1970 - 1976: High school studies
School: Juan XXIII, Cochabamba
Bachelor in Humanities
- 1979 - 1985: Physics - Mathematics Studies
University of Geneva, Switzerland
Degree – BS / MSc in Physics - Mathematics
- 1986 - 1991: PhD in Science, Physics Mention
University of Geneva, Switzerland
Doctor of Science, Physics Mention
- 1992 - 1994: Postdoctoral, Physics – Condensed Matter
Cavendish Laboratory, University of Cambridge, England

ACADEMIC EXPERIENCE

- 10/1985 - 10/1991: Teaching and Research Assistant
University of Geneva, Switzerland
- 07/1992 - 07/1994: Postdoctoral Research Associate
University of Cambridge, England
- 08/1994 - 07/1995: Full-time Visiting Lecturer
Universidad Mayor de San Simón
- 08/1995 - 07/2002: Lecturer
Universidad Privada Boliviana (UPB)
- 02/2000 - 02/2002: Head of the Department of Exact Sciences, UPB
- 03/2002 - 02/2003: Dean of Postgraduate Studies, UPB
- 03/2003 - 02/2013: Dean of Research, UPB
- 03/2013 - present: Vice-Rector for Research, UPB

PROFESSIONAL EXPERIENCE

- 10/1986 - 10/1991: Research Assistant
University of Geneva, Switzerland
- 07/1992 - 07/1994: Postdoctoral Research Associate
University of Cambridge, England
- 07/2003 - 07/2013: Research Consultant
University of Geneva – Switzerland, Charmilles Technologies S.A. – Switzerland

MAIN AREAS OF KNOWLEDGE

- Physics: Solid State Physics: Metals, Semiconductors, Insulators, Computational Physics, Mathematical Physics, Statistical Physics, Thermodynamics, Energy Band Structure Calculation, Many-Body Theory, Density Functional Theory, Hartree-Fock Theory, Diffusion Theory, Electrical Discharge Machining.
- Mathematics: Numerical Calculation, Complex Variables, Differential and Integral Calculus, Finite Elements.
- Computer Science: Simulation of Discrete and Continuous Systems, Software Development, Knowledge of VAX, IBM, CRAY Systems, Fortran, Matlab, Femlab, Comsol Languages.

PUBLICATIONS

SCIENTIFIC ARTICLES

- Study of Amrein - Pearson Bounds for the Scattering Cross Section
Master's Thesis
Jury: Prof. Dr. W. Amrein, University of Geneva - Switzerland, Prof. Dr. R. Pearson, University of Hull - England
- Study of the Exchange Potential in Density Functional Theory within the Framework of Pseudopotentials for Non-Metallic Crystalline Systems - PhD Thesis
Jury: Prof. Dr. B. Giovannini, University of Geneva - Switzerland, Prof. Dr. R. Car, Institut Romand for Numerical Research in Material Physics, Geneva - Switzerland, Prof. Dr. R. Baldereschi, École Polytechnique Fédérale de Lausanne, Lausanne - Switzerland and International Centre for Theoretical Physics, Trieste - Italy
- Positron Polarization in Semiconductors from LDA
H. N. Rojas, B. Barbiellini, and T. Jarlborg, Material Sciences Forum 105-110, 799 (1992)
- Space-Time Method for Ab Initio Calculations of Self-Energies and Dielectric Response Functions of Solids,
H. N. Rojas, R.W. Godby, and R.J. Needs, Phys. Rev. Lett. 74, 1827 (1995).

- The GW Space-Time Method for the Self-Energy of Large Systems,
M. Rieger, L. Steinbeck, J. D. White, H. N. Rojas, and R. Godby,
Computer Physics Communications, Vol. 117, No. 3, p. 211-228, 1999
- Theoretical Modelling of Energy Balance in Electroerosion,
R. Perez, H. N. Rojas, G. Walder, R. Flükiger,
Journal of Materials Processing Technology 149 (2004), 198 - 203
- Theoretical Analysis and Simulation of the Electro Discharge Machining Process. Design
of a New Version of CAPWIN Computer Program
H. N. Rojas, R. Perez, Confidential Report - Charmilles Technologies S.A. – University of
Geneva, (2003 – 2004)
- Fatigue Life Enhanced Micro-Alloyed White Layer
H. N. Rojas, R. Perez, Confidential Report - Charmilles Technologies S.A. – University of
Geneva, (2004 – 2005)
- Simulation of Electric Discharge Machining with Surface Modification and Resulting
Residual Stresses
H. N. Rojas, R. Perez, Confidential Report - Charmilles Technologies S.A., (2006 – 2007)
- Advanced Strategies for Improving the Surface Integrity in Electroerosion Machining
R. Perez, M. Boccadoro, G. Cusanelli, R. Flükiger, F. de Mestral, H. Rojas, K. Brans, B.
Lauwers,
ISEM-XVI The 16th International Symposium on Electromachining, April 2010,
Shanghai - China
- Proposition for a New Strategy for Evacuating Eroded Particles During Sinking Electrical
Discharge Machining. Hydrodynamic Study of the Existing Flow in the Gap.
H. N. Rojas, R. Perez, Confidential Report - Charmilles Technologies S.A., (2009 – 2011)

ACADEMIC TEXTS

- “Course in Electricity and Magnetism”
Prof. Dr. M. Bourquin and Dr. H. Rojas S., University of Geneva – Switzerland
- “Textbook of Quantum Mechanics I”
H. N. Rojas, Universidad Mayor de San Simón
- “Textbook of Quantum Mechanics II”
H. N. Rojas, Universidad Mayor de San Simón
- “Introduction to Solid State Physics”
H. N. Rojas, Universidad Mayor de San Simón

- “Solid State Physics I”
H. N. Rojas, Universidad Mayor de San Simón
- “Physics I: Classical Mechanics”
H. N. Rojas, Universidad Privada Boliviana
- “Physics II: Electricity and Magnetism”
H. N. Rojas, Universidad Privada Boliviana
- “Numerical Methods”
H. N. Rojas, Universidad Privada Boliviana

CONFERENCES AND INTERNATIONAL PRESENTATIONS

- Space-Time Approach to Computational Many-Body Theory of Solids,
H. N. Rojas, R. W. Godby, and R. J. Needs, Matter and Materials Physics Conference of the Institute of Physics, December 1993, Leeds, England.
- Space-Time Method for Ab Initio Calculations of Self-Energies and Dielectric Response Functions of Solids,
H. N. Rojas, R. W. Godby, and R. J. Needs, March Meeting of the American Physical Society, March 1994, Pittsburgh, USA
- Exchange Potential for Non-Metallic Crystalline Systems, Imaginary Space-Time Method for Calculating Electrical Properties,
H. N. Rojas Salinas, IX National Physics Meeting, Bolivian Society of Physics, November 1995, Tarija, Bolivia
- Ab Initio Calculations of Self-Energies and Dielectric Response Functions,
H. N. Rojas, M. Rieger, A. Schindlmayr, T. Pollehn, R. W. Godby, and R. J. Needs
15th General Conference of the Condensed Matter Division at the European Physical Society (invited talk), April 1996, Stresa Baveno, Italy
- Real-Space, Imaginary Time GW Calculations on Large Systems,
M. M. Rieger, L. Steinbeck, H. N. Rojas, I. D. White, A. Schindlmayr, T. Pollehn, R. W. Godby, and R. J. Needs
Eighth International Workshop on Computational Condensed Matter Physics: Total Energy and Force Methods of the International Centre for Theoretical Physics, (invited talk) January 1997, Trieste, Italy
- Mathematical Models in Cosmology,
H. N. Rojas
V Bolivian Congress of Mathematics: Application of Mathematics to Science and Technology. January 1998, Cochabamba, Bolivia

- Theoretical Modelling of Energy Balance in Electroerosion,
R. Perez, H. Rojas, G. Walder, R. Flükiger
ISEM-XIV The 14th International Symposium on Electromachining, March 2004,
Edinburgh, Scotland
- Advanced Strategies for Improving the Surface Integrity in Electroerosion Machining,
R. Perez, H. N. Rojas, G. Walder, R. Flükiger
ISEM-XVI The 16th International Symposium on Electromachining, April 2010, Shanghai,
China
- Modelling of Electric Discharge Machining (Invited Speaker),
H. N. Rojas
IV Bolivarian Congress of Mechanical Engineering, August 2010, Cochabamba, Bolivia

CONSULTING WORK

- Theoretical Analysis and Simulation of the Electro Discharge Machining Process. Design of a New Version of CAPWIN Computer Program, Charmilles Technologies S.A. – University of Geneva (2003 – 2004)
- Fatigue Life Enhanced Micro-Alloyed White Layer, Charmilles Technologies S.A. – University of Geneva (2004 – 2005)
- Simulation of Electric Discharge Machining with Surface Modification and Resulting Residual Stresses, Charmilles Technologies S.A. – University of Geneva (2006 – 2007)
- Advanced Strategies for Improving the Surface Integrity in Electroerosion Machining, Charmilles Technologies S.A. – University of Geneva (2008 – 2009)
- Proposition for a New Strategy for Evacuating Eroded Particles During Sinking Electrical Discharge Machining. Hydrodynamic Study of the Existing Flow in the Gap, Charmilles Technologies S.A. – School of Engineering Geneva (2010 – 2013)

LANGUAGES

- Spanish: spoken, written
- French: spoken, written
- English: spoken, written
- Quechua: spoken