

# José María Román Faúndez

## SP Control Technologies (frenetic.ai)

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## Summary

VP of Engineering at SP Control Technologies (frenetic.ai). Laboratory and O&M Services Director in the R&D, Aftersales Service Center at Yingli Green Energy Europe for nine years. Project Researcher at Centro Láser UPM. Director of Photovoltaic Systems Quality and Control Laboratory for five years at INGENIA Solar Energy and CENER. Technical Manager of the glass-glass PV modules production line for BIPV. Implementation of the quality management systems ISO 17025 and ISO 9001. Ph.D. in Physics with two years research experience in the USA. Publications in international journals with referee. Five years living abroad. Fluent English.

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## Current Situation

### Vice-President of Engineering

Dec. 2020-Present. **SP Control Technologies (frenetic.ai)**, Madrid, Spain.

- Management of technical team.
- Optimization of physical models applied to magnetic components for electrical and electronic equipment.
- Design modelling of magnetic components using Artificial Intelligence..

## Professional Experience

### Laboratory and O&M Director in the R&D, Aftersales Service Center

Feb. 2012-Nov. 2020. **Yingli Green Energy Europe**, Madrid, Spain.

- O&M Services supervision, performance reports generation.
- Training courses for O&M testing of PV plants.
- Monitoring of BIPV system integrated in YGEE building.
- Installation of an off-grid PV system, and planned project in energy demand management.
- Aftersales and R&D project management.
- Product analysis and test in the laboratory and in the field.
- New tests definition and compliance with the guidelines of ISO 17025.
- Member of AENOR SC-82 for PV modules and systems normalization.
- PV plants technical due-diligence.
- PV module manufacturing facilities audits.

### Project Researcher

Feb. 2011-Jan. 2012. **Centro Láser UPM**, Madrid, Spain.

- Researched on deposition of metallic contacts on PV solar cells using laser.
- Operation of q-switched and cw-lasers, Confocal microscope, SEM and EDX spectroscope.

### **Director of the Photovoltaic Systems Quality and Control Laboratory**

May 2007-Jan. 2011. **INGENIA Solar Energy**, Albacete, Spain.

- Quality control measurement of PV modules under international norms.
- Inspections and Performance measurements of PV plants.
- Design and dimensioning of PV plants and production estimates calculations.
- Implementation of the laboratory quality management system ISO 17025.

### **Manager of the Photovoltaic Systems Service**

Apr. 2006-Apr. 2007. **CENER - Spanish Center for Renewable Energy**, Navarra, Spain.

- Manager of the PV Modules Testing Laboratory.
- Manager of the PV Installation Design group.
- Implementation of the management system of the Service.
- Management of commercial and development projects.

### **Technical Manager of the PV module production line**

Oct. 2004-Mar. 2006. **Romag Ltd.** Consett, Co. Durham, UK.

- Design of the lamination process for custom made glass-glass solar modules and standard glass-Tedlar modules.
- Definition of the production process for custom-made glass-glass solar modules, as well as for glass-Tedlar modules for qualification under IEC 61215 standard.
- Compliance of the production process with quality management norm ISO 9001.
- Training of personnel in the production process and operation of vacuum laminator and flash-tester equipment
- Dealing with suppliers and customers.

## **Education**

### **Senior Management Course (CADE)**

Nov. 2009-Jun. 2010. **FEDA-Fundesem**. Albacete, Spain.

- **Objective:** To develop knowledge and basic skills for the overall management of a company.
  - Strategic management: Strategic management and Economic environment.
  - Marketing and commercialization: Marketing planning and Sales planning.
  - Economic and Financial: Financial analysis and Management control.
  - Human Resources and Management skills: Communication and People management.

### **EUREC Agency European Master in Renewable Energy**

Oct. 2003-Sept. 2004. **Universidad de Zaragoza**. Zaragoza, Spain.

- **Introduction:** CIRCE, University of Zaragoza, Spain.
  - Introduction to the technical and socio-economic aspects of the Renewable Energies: Wind Power, Photovoltaic Solar, Thermal Solar, Hydroelectric Power, and Biomass.
- **Specialization: Photovoltaic Solar Energy**, Northumbria University, Newcastle, UK.
  - Physics, design and technology of solar cells and modules, and design of Photovoltaic systems.
- **Final Project:** Architectural PV solar modules production line: Process description and implementation.
  - Jun. 2004-Sept. 2004. Romag Ltd., Consett, Co. Durham, UK.
  - Design of the lamination process for custom made glass-glass solar modules.

## Ph.D. in Physics

Oct. 1994-Oct. 1998. **Universitat de Barcelona**. Barcelona, Spain.

- Training in Quantum Field Theory, General Relativity, Nuclear Physics, Stochastic equations and noise, and String Theory.
- **Thesis dissertation:** Low Energy Properties of Magnetic Systems.
  - **Supervisor:** Joan Soto Riera.
  - Combined crystallography, optics and effective field theory to determine the dynamics of spinwave excitations and non-reciprocal effects in ferromagnets and antiferromagnets.
  - Applied a recursive numerical technique to compute ground state properties of quantum spin ladders.

## Bachelor of Science in Physics, specialized in Solid State Physics

Sept. 1989-June 1994. **Univ. del País Vasco - Euskal Herriko Unibertsitatea**. Leioa, Spain.

- Training in Crystallography, Lattice dynamics and phonons, Electronic structure and semiconductors, Quantum Mechanics, Optics, Dielectric materials, together with several sets of related experiments.

## Research Experience

Jul. 2001-Nov. 2003. **Intituto de Física Teórica, CSIC-UAM**. Madrid, Spain.

- Studied the cyclic flow of the RG and its effects in superconductors and spin chains.
- Obtained the main features of the ground state and excitations in small grains of materials with superconducting correlations.

Jan. 2001-Jul. 2001. **Universidade de Évora**. Évora, Portugal.

- Collaborated with ISTAS in the preparation of a program of scientific conferences.
- Described the finite energy 1-D Hubbard model excitations as combinations of spinons and holons.

Nov. 1998-Dec. 2000. **University of Illinois at Urbana-Champaign**. Urbana, Illinois, USA.

- Studied the suppression of the superconducting order parameter around magnetic impurities in *d*-wave superconductors.
- Extended the effective theory of spin waves to canted phases and applied it to the study of magnetic excitations in doped manganites.

Oct. 1994-Oct. 1998. **Universitat de Barcelona**. Barcelona, Spain.

- Defined a continuum model to obtain the ground state phase diagram of doped manganites as a function of doping.
- Combined crystallography, optics and effective field theory to determine the dynamics of spin wave excitations and non-reciprocal effects in ferromagnets and antiferromagnets.

Oct. 1997-Dec. 1997. **Consejo Superior de Investigaciones Científicas (CSIC)**. Madrid, Spain.

- Applied a recursive numerical technique to compute ground state properties of quantum spin ladders.

**Publications:** Fourteen publications in international journals with referee.

**Seminars and Communications in Congresses:** Seventeen oral and two poster invited presentations in several universities and international conferences.

**Courses and Conferences:** Twenty two international courses and conferences attended.

**Projects Supervised** Eight research projects supervised in Photovoltaic Solar Energy.

**Outreach Contributions** One presentation and one article published.

## Teaching Experience

- 1998. Taught problems of the Eighth Semester subject Nuclear Physics and Particles. Facultat de Física. Universitat de Barcelona. Barcelona, Spain.
- 1995. Taught problems of the Second Semester subject Classical Mechanics and Waves. Facultat de Física. Universitat de Barcelona. Barcelona, Spain.

## Fellowships

- Jan. 2001-Jul. 2001. Postdoctoral fellowship from the Foundation for Science and Technology of the Portuguese Government.
- Nov. 1998-Sept. 2000. Postdoctoral FPI fellowship from the Dpt. of Education, Universities and Research of the Basque Country Government.
- Oct. 1994-Sept. 1998. Predoctoral FPI fellowship from the Dpt. of Education, Universities and Research of the Basque Country Government.

## Professional Skills

- Excellent organizational skills for the business administration complying with the quality norms ISO 9001 and ISO 17025.
- Extensive experience in solving complex mathematical and physical problems through a combination of analytical and numerical techniques.
- Experienced in multidisciplinary work and quick adaptability to new topics. Quick learning ability and teaching ability.

## Computer Skills

- Expert in office and calculation tools: MS Word, Excel and Access,  $\text{\TeX}$  and  $\text{\LaTeX}$ .
- Projects and tests laboratory management system based on Access and Excel.
- Knowledge of Auto-CAD, HTML (<http://dftuz.unizar.es/ftzar/mapoftheweb.html>), Java, JSON and XML.
- Strong experience programming in C++, FORTRAN, Python, VBA, Mathematica and Octave for the solution of problems numerically.
- Combined C++ code with FORTRAN and XmGrace libraries to obtain real-time graphical outputs.
- Monitoring application by reading and analyzing data with VBA and Excel from Access database.
- Monitoring application by reading and analyzing data with Python and MS SQLServer.
- Linux administration at intermediate level. User of UNIX (AIX, IRIX), Windows and Windows NT platforms.

## Languages

- Spanish, English, and moderate knowledge of Portuguese, Catalan and Basque.
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## Publications

1. A. LeClair, J. M. Román and G. Sierra, *Log-periodic Behavior of Finite-size Effects in Field Theories with RG Limit Cycles*. *Nucl. Phys.* **B700** (2004) 407-435.
2. G. Sierra, J. M. Román and J. Dukelsky, *The Elementary Excitations of the BCS Model in the Canonical Ensemble*. *Int. J. Mod. Phys.* **A19S2** (2004) 381-395.
3. J. M. P. Carmelo, J. M. Román and K. Penc, *Charge and Spin Quantum Fluids Generated by Many-Electron Interactions*. *Nucl. Phys.* **B683** (2004) 387-422.
4. A. LeClair, J. M. Román and G. Sierra, *Russian Doll Renormalization Group and Superconductivity*. *Phys. Rev.* **B69** (2004) 020505 (4 pages).
5. A. LeClair, J. M. Román and G. Sierra, *Russian Doll Renormalization Group, Kosterlitz-Thouless Flows, and the Cyclic sine-Gordon Model*. *Nucl. Phys.* **B675** (2003) 584-606.
6. J. Dukelsky, J. M. Román and G. Sierra, *Comment on Polynomial-time Simulation of Pairing Models on a Quantum Computer*. *Phys. Rev. Lett.* **90** (2003) 249803.
7. J. M. Román, G. Sierra and J. Dukelsky, *Elementary Excitations of the BCS Model in the Canonical Ensemble*, *Phys. Rev.* **B67** (2003) 064510 (6 pages).
8. J. M. Román, G. Sierra and J. Dukelsky, *Large N Limit of the Exactly Solvable BCS Model: Analytics versus Numerics*, *Nucl. Phys.* **B634** (2002) 483-510.
9. J. M. Román and J. Soto, *Spin Waves in Canted Phases: An Application to Doped Manganites*, *Phys. Rev.* **B62** (2000) 3300-3315.
10. J. M. Román and J. Soto, *Continuum Double Exchange Model*, *Phys. Rev.* **B59** (1999) 11418-11423.
11. J. M. Román and J. Soto, *Spin Wave Mediated Non-Reciprocal Effects in Antiferromagnets*, *Ann. Phys.* **273** (1999) 37-57.
12. J. M. Román and J. Soto, *Effective Field Theory Approach to Ferromagnets and Antiferromagnets in Crystalline Solids*, *Int. J. Mod. Phys.* **B13** (1999) 755-789.
13. J. M. Román, G. Sierra, J. Dukelsky and M. A. Martín-Delgado, *The Matrix Product Approach to Quantum Spin Ladders*, *J. Phys.* **A31** (1998) 9729-9759.
14. J. M. Román and R. Tarrach, *The Regulated Four-Parameter One-Dimensional Point Interaction*, *J. Phys.* **A29** (1996) 6073-6085.

## Outreach Publications

1. J. M. Román, *Rendimiento de instalaciones fotovoltaicas conectadas a la red eléctrica y su aplicación a BIPV*. *cicNetwork Ciencia y Tecnología* **nº 11** (mayo 2012) 36-42.

## Seminars

1. *Yingli Spain recommendations for O&M tasks in PV plants in desertic areas of Perú and Senegal.* Workshop INVIVONext on O&M and Acceptance for PV plants in arid climates. CIEMAT, Madrid, Spain. Dec. 14, 2017.
2. *Yingli Spain R&D, Aftersales Service Center BIPV system: one year experience.* Workshop Eco-design from PV to BIPV. CIEMAT, Madrid, Spain. Mar. 14-17, 2017.
3. *Estado de desarrollo actual de la tecnología fotovoltaica.* Jornada UPM-UNEF-AS: Cambio energético y autoconsumo solar en España - los retos para la nueva legislatura. ETS de Ingeniería y Diseño Industrial (UPM), Madrid. Spain. Dec. 16, 2015.
4. *El Futuro de la Energía Solar Fovoltáica.* Club Español de la Energía. Madrid, Spain. May 11, 2006.
5. *Cyclic RG Theories and c-Function Behavior in Finite Size Systems.* Dpt. d'Estructura i Constituents de la Matèria. Facultat de Física. Universitat de Barcelona. Barcelona, Spain. Jan. 8, 2004.
6. *Limit Cycles in the Renormalization Group of the BCS and the sine-Gordon models.* Dpto. de Física Teórica. Universidad de Zaragoza. Zaragoza, Spain. Oct. 29, 2003.
7. *Russian Doll Renormalization Group and Superconductivity.* Instituto de Ciencias de Materiales de Madrid, CSIC. Madrid, Spain. Mar. 20, 2003.
8. *Superconductivity in Small Grains: Ground State Thermodynamic Limit and Excitations.* Dpto. de Física Aplicada. Universidad de Alicante. Alicante, Spain. Nov. 21, 2002.
9. *Superconductivity in Small Grains: Ground State Thermodynamic Limit and Excitations.* Dpt. d'Estructura i Constituents de la Matèria. Facultat de Física. Universitat de Barcelona. Barcelona, Spain. Jul. 4, 2002.
10. *Disentangling Canted Phases and Phase Separation Regions in Doped Manganites with Spin Waves.* Centro de Física das Interações Fundamentais. Instituto Superior Técnico. Lisbon, Portugal. Apr. 3, 2001.
11. *Disentangling Canted Phases and Phase Separation Regions in Doped Manganites with Spin Waves.* Dpto. de Física. Faculdade de Ciências. Universidade do Porto. Oporto, Portugal. Jan. 26, 2001.
12. *Disentangling Canted Phases and Phase Separation Regions in Doped Manganites with Spin Waves.* Instituto de Ciencias de Materiales de Madrid, CSIC. Madrid, Spain. Jan. 10, 2000.
13. *Doped Manganites Phase Diagram from a Continuum Double Exchange Model.* Dpto. de Física del Estado Sólido. Facultad de Química. Universidad del País Vasco - Euskal Herriko Unibertsitatea (UPV-EHU). San Sebastian-Donostia, Spain. Sept. 9, 1999.
14. *Effective Field Theory Approach to Spin Wave Mediated Non-Reciprocal Effects in Antiferromagnetic Crystals.* Instituto de Ciencias de Materiales de Madrid, CSIC. Madrid, Spain. Dec. 10, 1997.
15. *Effective Field Theory Approach to Spin Wave Mediated Non-Reciprocal Effects in Antiferromagnetic Crystals.* Dpto. de Física Teórica e Historia de la Ciencia. Facultad de Ciencias. Universidad del País Vasco - Euskal Herriko Unibertsitatea (UPV-EHU). Leioa, Spain. Nov. 13, 1997.

## Communications in Congresses

1. *Russian Doll Renormalization Group and Superconductivity.* Trobada de Nadal 2002 (Christmas Meeting 2002) del dpt. d'Estructura i Constituents de la Matèria. Barcelona, Spain. Dec. 19-20, 2002.
2. *Disentangling Canted Phases from Phase Separation Regions in Doped Manganites with Spin Waves.* Euroconference on Transport and Dynamics in Complex Electronic Materials. Oporto, Portugal. Sept. 3-7, 2001.
3. *Disentangling Canted Phases from Phase Separation Regions in Doped Manganites with Spin Waves.* 2000 March Meeting of the American Physical Society. Minneapolis, MN, USA. Mar. 20-24, 2000.
4. *Doped Manganites Phase Diagram from a Continuum Double Exchange Model.* Summer School on Exotic States in Quantum Nanostructures. Windsor, UK. Aug. 16-29, 1999.

## Outreach Presentations

1. *El bosón de Higgs: la simetra y la masa*. Ibarangelu (Vizcaya), Spain. Dec. 23, 2012.

## Courses and Conferences

1. 34th European PV Solar Energy Conference EU PVSEC 2018. Brussels, Belgium. Sept. 24-28, 2018.
2. Workshop *INVIVONext on O&M and Acceptance for PV plants in arid climates*. CIEMAT, Madrid, Spain. Dec. 14, 2017.
3. Principios de Almacenamiento de Energía. CIEMAT, Madrid, Spain. Oct. 2-6, 2017.
4. 33rd European PV Solar Energy Conference EU PVSEC 2017. Amsterdam, The Netherlands. Sept. 25-29, 2017.
5. Workshop *Eco-design from PV to BIPV*. CIEMAT, Madrid, Spain. Mar. 14-17, 2017.
6. 32nd European PV Solar Energy Conference EU PVSEC 2016. Munich, Germany. Jun. 20-24, 2016.
7. Jornada UPM-UNEF-AS: Cambio energético y autoconsumo solar en España - los retos para la nueva legislatura. ETS de Ingeniería y Diseño Industrial (UPM), Madrid, Spain. Dec. 16, 2015.
8. 31st European PV Solar Energy Conference EU PVSEC 2015. Hamburg, Germany. Sept. 14-18, 2015.
9. 29th European PV Solar Energy Conference EU PVSEC 2014. Amsterdam, The Netherlands. Sept. 22-26, 2014.
10. 28th European PV Solar Energy Conference EU PVSEC 2013. Paris, France. Sept. 30-Oct. 4, 2013.
11. 27th European PV Solar Energy Conference EU PVSEC 2012. Frankfurt, Germany. Sept. 24-28, 2012.
12. 21st European PV Solar Energy Conference EU PVSEC 2006. Dresden, Germany. Sept. 4-8, 2006.
13. Trobada de Nadal 2002 (Christmas Meeting 2002) del dpt. d'Estructura i Constituents de la Matèria. Universitat de Barcelona. Barcelona, Spain. Dec. 19-20, 2002.
14. Euroconference on *Transport and Dynamics in Complex Electronic Materials*. Oporto, Portugal. Sept. 3-7, 2001.
15. 2000 March Meeting of the American Physical Society. Minneapolis, MN, USA. Mar. 20-24, 2000.
16. Summer School on *Exotic States in Quantum Nanostructures*. Windsor, UK. Aug. 16-29, 1999.
17. Summer School on *Dynamic Correlations in Many Fermion Systems*. Vila Nova de Cerveira, Portugal. Jul. 14-25, 1997.
18. Advanced School on *Non-Perturbative Quantum Field Theory*. Peñíscola, Spain. Jun. 2-6, 1997.
19. Conference on *Quantum Field Theory in Low Dimensional and Condensed Matter Systems*. Instituto de Ciencias de Materiales, CSIC. Madrid, Spain. Nov. 7-8, 1996.
20. IV Autumn School of Theoretical Physics on *Non-perturbative Methods in Quantum Field Theory*. Santiago de Compostela, Spain. Sept. 2-14, 1996.
21. Complutense University Summer School on *Strongly Correlated Magnetic and Superconducting Systems*. San Lorenzo del Escorial, Spain. Jul. 15-19, 1996.
22. III Autumn School of Theoretical Physics on *Introduction to the Standard Model of the Fundamental Interactions*. Santiago de Compostela, Spain. Sept. 4-16, 1995.



## Other Courses

1. *Machine Learning*. (<https://www.coursera.org/learn/machine-learning/>). Courses: Linear and Logistic Regression, Regularization, Classification, Neural Networks, SVM. Taught by Andrew Ng. Stanford University. Audited in August 2016.
2. *Python for Everybody Specialization*. (<https://www.coursera.org/specializations/python/>). Courses: Programming for Everybody (Getting Started with Python), Python Data Structures, Using Python to Access Web Data, Using Databases with Python. Taught by Charles Russell Severance. University of Michigan. Audited in July 2016.
3. *Internet History, Technology, and Security*. (<https://www.coursera.org/learn/internet-history/>). History of internet and programming languages. Taught by Charles Russell Severance. University of Michigan. Attended in July 2016.

## Projects Supervised

1. *Técnicas de regresión y análisis de datos*. Feb. 2018-Apr. 2018 (135 h). Programa de Prácticas Externas Curriculares (Grado de Ciencias Físicas, UAM). Student: Ricardo Olivas González.
2. *Optimización de potencia fotovoltaica instalada para un sistema de autoconsumo bajo la regulación del RD 900/2015*. Feb. 2016-May 2016 (250 h). Proyecto del Máster en Energías y Combustibles para el Futuro (UAM). Student: Enrique Iborra Pernichi.
3. *Medida de coeficientes de corrección de curvas I-V para medidas en condiciones de campo* (continuación). Nov. 2015-Feb. 2016 (135 h). Programa de Prácticas Externas Curriculares (Grado de Ciencias Físicas, UAM). Student: Daniel Vidal Ortiz.
4. *Medida de coeficientes de corrección de curvas I-V para medidas en condiciones de campo*. May 2015-Jul. 2015 (135 h). Programa de Prácticas Externas Curriculares (Grado de Ciencias Físicas, UAM). Student: Mariano Domingo Jiménez Sánchez.
5. *Propuesta de un esquema de monitorización en tiempo real del sistema de módulos fotovoltaicos de la empresa Yingli Green Energy Spain*. Feb. 2015-May 2015 (250 h). Proyecto del Máster en Energías y Combustibles para el Futuro (UAM). Student: José Alberto Florez.
6. *Desarrollo del sistema de adquisición y análisis de datos del sistema fotovoltaico instalado en Yingli*. Feb. 2014-Apr. 2014 (250 h). Proyecto del Máster en Energías y Combustibles para el Futuro (UAM). Student: Juan Ramón Diego Cagigas.
7. *Electroluminescence defects analysis and classification*. Aug. 2013-Sept. 2013 (120 h). Programa de Prácticas Externas Curriculares (Grado de Ciencias Físicas, UAM). Student: Aitor Balda Jurado.
8. *Puesta en marcha de trazador de curvas I-V Daystar DS-100C*. Sept. 2012-Oct. 2012 (120 h). Programa de Prácticas Externas Curriculares (Grado de Ciencias Físicas, UAM). Student: Moisés Oñoro Salaces.

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Madrid, 19 January 2021.