

Curriculum Vitae – Dr. Juan Mauricio Matera

PERSONAL INFORMATION

Nationality Argentine

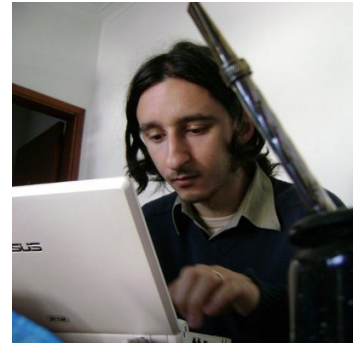
Date of birth July 16, 1981

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Address Departamento de Física,
Facultad de Ciencias Exactas,
Universidad Nacional de La Plata,
1900 La Plata (POBox 67),
Argentina.

E-mail matera@fisica.unlp.edu.ar

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LANGUAGES

Mother tongue Spanish

Other Languages English; level of proficiency: Intermediate (B2)
German; level of proficiency: Beginner (A1)

CURRENT POSITIONS

2012- Fellow of CONICET (Argentina). Level: Assistant Researcher.

2012- Teaching Assistant, School of Engineering, UNLP. Subject: *Electromagnetism*.

2012- Teaching Assistant, School of Science, UNLP. Subjects: *Linear Algebra* and *Advanced Topics on Quantum Mechanics*.

EDUCATION AND DEGREES

2011 Ph. D. in Physics

Facultad de Ciencias Exactas, UNLP, La Plata, Argentina

Thesis title: *Quantum entanglement in many-body systems*.

(Original Title: Entrelazamiento cuántico en sistemas de muchos cuerpos)

Qualification: 10

2006 Degree in Physics

Facultad de Ciencias Exactas, UNLP, La Plata, Argentina

Title of Degree thesis: *Bose Einstein condensation in Ion traps*.

Qualification: 10

FIELDS OF INTEREST

Quantum Information theory

Simulation and Efficient Representation of Quantum Systems

Entanglement and quantum correlations in quantum many-body systems

Foundations of Quantum Mechanics

Quantum Biology

Quantum Cosmology

POSTGRADUATE COURSES

2010 *Path integral in quantum field theory and statistical mechanics*.
duration: 60 hs

2010 *The Science and its origins in the scientific revolution*.
duration: 45 hs

2010 *Renormalization group and phase transitions*.
duration: 60 hs

SCHOLARSHIPS
AND
GRANTS
AWARDED

- 2012** Beca CONICET de Postdoctorado (CONICET Postdoc grant).
Project Title: *Entrelazamiento en sistemas cuánticos de muchos cuerpos* (Entanglement in quantum many-body systems). IFLP (Physics Institute), La Plata.
Director: Prof. N. Canosa
- 2010-2012** Beca CONICET de Doctorado Tipo II (CONICET PhD grant, type II).
Project Title: *Entrelazamiento en sistemas cuánticos de muchos cuerpos* (Entanglement in quantum many-body systems). IFLP(Physics Institute), La Plata.
Director: Prof. R. Rossignoli
- 2007** Beca CONICET de Doctorado Tipo I (CONICET PhD grant, type I).
Project Title: *Entrelazamiento en sistemas cuánticos de muchos cuerpos* (Entanglement in quantum many-body systems). IFLP(Physics Institute), La Plata.
Director: Prof. R. Rossignoli

SCIENTIFIC
PUBLICACIONES

- Preprint, 2014** Article: *Phase diagram study of a dimerized spin-S zig-zag ladder* J. M. Matera, C. A. Lamas, quant-ph/1403.3737.
- Physical Review A, 2012** Article: *Entanglement and area laws in weakly correlated Gaussian states* J. M. Matera, R. Rossignoli, N. Canosa, Phys. Rev. A 86, 062324.
- Physical Review A, 2012** Article: *Measurements, quantum discord, and parity in spin-1 systems* R. Rossignoli, J. M. Matera, N. Canosa, Phys. Rev. A 86, 022104.
- JRLR, 2011** Proceeding: *Evaluation of entanglement measures in spin systems with the random phase approximation* N. Canosa, R. Rossignoli, J. M. Matera, J. Russian Laser Research 32, 322-330.
- Physical Review A, 2011** Article: *Even-odd entanglement in boson and spin systems* R. Rossignoli, N. Canosa, J. M. Matera, Phys. Rev. A 83, 042328.
- Physical Review A, 2010** Article: *Evaluation of ground-state entanglement in spin systems with the random phase approximation* J. M. Matera, R. Rossignoli, N. Canosa, Phys. Rev. A 82, 052332.
- Physical Review B, 2010** Article: *Separability and entanglement in finite dimer-type chains in general transverse fields* N. Canosa, R. Rossignoli, J. M. Matera, Phys. Rev. B 81, 054415.
- Physical Review A, 2009** Article: *Factorization and entanglement in general XYZ spin arrays in nonuniform transverse fields* R. Rossignoli, N. Canosa, J. M. Matera. Phys. Rev. A 80, 062325.
- Physical Review A, 2008** Article: *Evaluation of pairwise entanglement in translationally invariant systems with the random phase approximation* J. M. Matera, R. Rossignoli, and N. Canosa. Phys. Rev. A 78, 042319.
- Physical Review A, 2008** Article: *Thermal entanglement in fully connected spin systems and its random-phase-approximation description* J. M. Matera, R. Rossignoli, N. Canosa. Phys. Rev. A 78, 012316.
- Physical Review A, 2008** Article: *Entanglement of finite cyclic chains at factorizing fields* R. Rossignoli, N. Canosa and J. M. Matera. Phys. Rev. A 77, 052322.
- Physical Review A, 2007** Article: *Description of thermal entanglement with the static path plus random-phase approximation* N. Canosa, J. M. Matera, and R. Rossignoli. Phys. Rev. A 76, 022310.

INTERNATIONAL
SCIENTIFIC
MEETINGS
(LAST 5 YEARS)

- 2013** IV quantum information school and workshop. Paraty, Rio de Janeiro, Brazil, August 2013.
- 2013** Workshop & Conference on Geometrical Aspects of Quantum States in Condensed Matter. ICTP, Trieste, Italia. June 2013.
- 2012** II Bienal Latinoamericana de Óptica Cuántica, Buenos Aires, Argentina, November 2012.
- JFC, 2012** II Jornadas de Fundamentos de Cuántica: Aspectos Epistemológicos, La Plata, Argentina, November 2012.
- 2011** III quantum information school and workshop. Paraty, Rio de Janeiro, Brazil, August 2011.
- 2011** *Humboldt Kolleg 2010. Argentine- Germany: A century of scientific Cooperation in Physics*, La Plata, Argentina. February 2011.
- 2009** II quantum information school and workshop. Paraty, Rio de Janeiro, Brazil, August 2009

2009 Summer school and advanced workshop on trends and developments in linear algebra. ICTP, Trieste, Italy, July 2009.

PRESENTATIONS IN
SCIENTIFIC
CONFERENCES
(LAST 5 YEARS)

- AFA, 2013** Talk: *Entrelazamiento y leyes de áreas en sistemas débilmente correlacionados*
J. M. Matera, R. Rossignoli, N. Canosa
in *98^o Reunión nacional de Física de la Asociación Física Argentina*, Bariloche, Argentina.
- Paraty, 2013** Poster: *Entanglement and Area Laws in Weakly Correlated States*
J. M. Matera, R. Rossignoli, N. Canosa
in *IV Paraty Quantum Information School and Workshop*, Paraty, Brasil.
- ICTP, 2013** Talk: *Entanglement and Area Laws in Weakly Correlated states*
J. M. Matera, R. Rossignoli, N. Canosa
In *Workshop & Conference on Geometrical Aspects of Quantum States in Condensed Matter*, ICTP, Trieste, Italia.
- AFA, 2012** Talk: “Caracterización de medidas y evaluación de la discordancia cuántica en sistemas de espín 1”
Canosa, N., J. M. Matera, Rossignoli, R.
in “97^a Reunión Nacional de la Asociación Física Argentina”, Villa Carlos Paz, Córdoba.
- BLOCO, 2012** Talk: *Entanglement and Area Laws in Weakly Correlated Gaussian states*
J. M. Matera, R. Rossignoli, Canosa, N.
in *II Bienal Latinoamericana de Óptica Cuántica*, Buenos Aires, Argentina.
- JFC, 2012** Talk: *Entrelazamiento y leyes de área*
J. M. Matera, Rossignoli, R, Canosa, N.
in *II Jornadas de Fundamentos de Cuántica: Aspectos Epistemológicos*, La Plata, Argentina.
- Paraty, 2011** Talk: *Evaluation of entanglement observables in Spin Systems and its evaluation by means of RPA formalism*
Juan Mauricio Matera, Raul Rossignoli, Norma Canosa
in *III quantum information school and workshop*, Paraty, Brazil
- HK, 2011** Talk: *Evaluation of entanglement observables in spin systems.*
Juan Mauricio Matera, Raul Rossignoli, Norma Canosa
In *Humboldt Kolleg 2010. Argentine- Germany: A century of scientific Cooperation in Physics*, La Plata, Argentina. February 2011.
- AFA, 2009** Poster: *Entrelazamiento y factorización en cadenas de dímeros.*
Juan Mauricio Matera, Raul Rossignoli, Norma Canosa
In *94^a REUNION NACIONAL DE LA ASOCIACION FISICA ARGENTINA*, Rosario, Argentina.
- AFA, 2009** Poster: *Descripción de entrelazamiento cuántico cuántico en sistemas con invariancia traslacional mediante la aproximación RPA.*
J.M. Matera, R. Rossignoli, N. Canosa.
In *94^a REUNION NACIONAL DE LA ASOCIACION FISICA ARGENTINA*, Rosario, Argentina.
- Paraty, 2009** Poster: *Entanglement in thermal systems of spin and quantum fluctuations of small amplitude.*
Juan Mauricio Matera, Raul Rossignoli, Norma Canosa
In *II Quantum Information School and Workshop. Rio de Janeiro, Brazil.*
- Paraty, 2009** Poster: *Entanglement of finite spin chains at transverse factorizing fields.*
R. Rossignoli, N. Canosa, J.M. Matera.
In *II Quantum Information School and Workshop. Rio de Janeiro, Brazil.*
- Giambiagi, 2009** Poster: *Pairwise entanglement in finite spin chains at finite temperature,*
J.M. Matera, N. Canosa, R. Rossignoli.
In *THE QUANTUM MECHANICS OF THE XXI CENTURY: MANIPULATION OF COHERENT ATOMIC MATTER : Eleventh J. J. Giambiagi Winter School.* Buenos Aires, Argentina.
- Giambiagi, 2009** Poster: *Entanglement of finite cyclic chains at factorizing fields,*
R. Rossignoli, N. Canosa, J.M. Matera.
In *THE QUANTUM MECHANICS OF THE XXI CENTURY: MANIPULATION OF COHERENT ATOMIC MATTER : Eleventh J. J. Giambiagi Winter School.* Buenos Aires, Argentina.
- Giambiagi, 2009** Poster: *RPA approximation and quantum entanglement in translational invariant spin systems*
J.M. Matera, R. Rossignoli, N. Canosa.

In *THE QUANTUM MECHANICS OF THE XXI CENTURY: MANIPULATION OF COHERENT ATOMIC MATTER* : Eleventh J. J. Giambiagi Winter School. Buenos Aires, Argentina.

TEACHING ACTIVITIES	[2005-]Teaching Assistant in the Physics Department, Faculty of Sciences, UNLP [2005-]Teaching Assistant in the Basic Sciences Department, Faculty of Engineering, UNLP
OTHER SKILLS	10 years experience working in GNU/Linux environments. Expert user of Wolfram Mathematica and Octave . Lots of experience in C and C++ programming. Lots of experience in HTML , Javascript and PHP . Basic skills in Python programming.
PRIZES AND AWARDS	2007 <i>Joaquin V. Gonzalez</i> Award to the best GPA of Facultad de Ciencias Exactas, UNLP. Municipalidad de La Plata, Bs As, Argentina