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CURRENT POSITION

Postdoctoral Researcher, Theoretical Physics KU Leuven, Belgium, since Oct. 2023
Associate Researcher International Center of Theoretical Physics ICTP, Trieste, Italy, since 2022.
CONICET Researcher, National Research Council, Argentina IFEG-CONICET, since Dec. 2016.
Adjunt Professor, FaMAF-UNC, Facultad de Matemática, Astronomía, Física y Computación, Universidad Nacional de Córdoba, Argentina, since Nov. 2017

EDUCATION

Ph. D. in Physics, Universidad Nacional de Córdoba, Argentina, 2004-2009. Thesis title: "Coherent dynamics of charge and spin excitations in one-dimensional systems", Advisor: Horacio M. Pastawski.
Bachelor and master in Physics, Universidad Nacional de Córdoba, Argentina,1999-2004. Master's thesis title: "Fermi golden rule and dynamical interference effects in model systems". Advisor: Horacio M. Pastawski. GPA: 9.67/10.

RESEARCH LINES

Soft Matter and Biophysics: Cell membrane models, lipid domains, structure and dynamics. Colloidal systems. Langmuir monolayer experiments. Small Angle Scattering experiments. Ornstein-Zernike equations, Monte-Carlo and Brownian Dynamics simulations.
Statistical physics: Magnetic systems that present reverse magnetization, analytical approximations and Monte-Carlo simulations.
Non-equilibrium thermodynamics: Non-equilibrium calorimetry, analytical studies and simulations.

PUBLICATIONS

Integral equation theory for two-dimensional density dipolar interacting disks, E. Rufeil-Fiori, A. J. Banchio, Phys. Rev. E 108, 064605 (2023), arXiv:2305.12910.
Magnetization reversal study of $Ni_{4-x}Zn_xNb_2O_9$ compound using Monte Carlo simulations, E. Rufeil-Fiori, J. P. Bolletta, C. Martin, A. Maignan and O. V. Billoni, J. Phys.: Condens. Matter 36, 015801 (2023).
Biobased supramolecular ionic networks with optimized crystallinity and mechanical properties as promising dynamic materials for eutectogels design, L. I. Ronco, G. C. Luque, C. A. Calderón, E. M. Euti, E. Rufeil-Fiori, D. E. Barraco, E. P.M. Leiva, D. Mecerreyes, R. J. Minari and M. Picchio, *Materials Today Chemistry*, 101525 (2023).

Influence of Spontaneous Curvature on the Line Tension of Phase-Coexisting Domains in a Lipid Monolayer: A Landau-Ginzburg Model, E. Rufeil-Fiori, R. Downing, G. Volpe-Bossa and S. May, *J. Chem. Phys.* 152, 054707 (2020). IF: 2.991. doi.org/10.1063/1.5138192

Description of composite bosons in discrete models, P. Céspedes, E. Rufeil Fiori, P. A. Bouvrie, A. P. Majtey, C. Cormick, *Phys. Rev. A* 100, 012309 (2019). IF: 2.777. arXiv: 1903.09906v1. doi.org/10.1103/PhysRevA.100.012309

Domain size polydispersity effects on the structural and dynamical properties in lipid monolayers with phase coexistence, E. Rufeil Fiori, A. J. Banchio, *Soft Matter* 14, 1870 (2018). IF: 3.399. arXiv:1802.05740. doi.org/10.1039/C7SM02099F

Dipolar interactions between domains in lipid monolayers at the air-water interface, E. Rufeil Fiori, N. Wilke, A. J. Banchio, *Soft Matter* 12, 2469 (2016). arXiv:1510.04350. doi.org/10.1039/C5SM02862K

A Shannon-Tsallis transformation, E. Rufeil Fiori, A. Plastino. *Physica A* 392 1742–1749 (2013). IF: 2.790. arXiv:1201.4507. doi.org/10.1016/j.physa.2012.12.037

Effective one-body dynamics in multiple-quantum NMR experiments, E. Rufeil Fiori, C. M. Sánchez, F. Y. Oliva, H. M. Pastawski, P. R. Levstein, *Phys. Rev. A* 79, 032324 (2009). IF: 2.777. Virtual Journal of Nanoscale Science & Technology 19, Issue 16 (2009). Virtual Journal of Quantum Information 9, Issue 4 (2009). arXiv: 0810.1722. doi.org/10.1103/PhysRevA.79.032324

Survival Probability of a local excitation in a Non-Markovian environment: Survival Collapse, Zeno and Anti-Zeno effects, E. Rufeil Fiori, H. M. Pastawski, *Physica B* 404, 2812-2815 (2009). IF: 1.880. arXiv: 0812.1009. doi.org/10.1016/j.physb.2009.06.109

Survival probability of surface excitation in a 2d lattice: non-Markovian effects and Survival Collapse, E. Rufeil Fiori, H. M. Pastawski, *Braz. Journ. of Phys.* 36, 844-847 (2006). IF: 1.082. arXiv:quant-ph/0604069. doi.org/10.1590/S0103-97332006000600012

Non-Markovian decay beyond the Fermi Golden Rule: Survival Collapse of the polarization in spin chains, E. Rufeil Fiori, H. M. Pastawski, *Chem. Phys. Lett.* 420, 35-41 (2006). IF: 2.029. arXiv: quant-ph/0511176. doi.org/10.1016/j.cplett.2005.12.025

VISITS & STAYS

International Center of Theoretical Physics (ICTP), Trieste, Italy. Quantitative Life Sciences group, May – June 2023, **Regular Associate Program.**

International Center of Theoretical Physics (ICTP), Trieste, Italy. Quantitative Life Sciences group, Sept – Oct 2022, **Regular Associate Program.**

North Dakota State University, US. Host: Sylvio May, **Fulbright-CONICET felowship,** Aug.-Nov. 2019.

University of California at Berkeley, US, Host: Carlos Bustamante, CONICET internship, Sep.-Dec. 2014.

National University of Singapore, Singapur. Host: Vlatko Vedral, internship of National University of Singapore, Feb.-March 2009.

Universidade do Estado do Rio de Janeiro, Brasil. Advisor: C. H. Lewenkopf. Feb.-March 2006.

International Center of Theoretical Physics, Trieste, Italia. Advisor: Horacio M. Pastawski, Young Collaborator Program fellowship, ICTP, Aug.-Oct. 2004.

CONFERENCE TALKS & SEMINARS (LAST YEARS)

Dipolar density inter-domain interaction in lipid monolayers, Quantitative Life Sciences group seminar, Abdus Salam International Centre for Theoretical Physics (*ICTP*), Trieste, Italy, June 2023.

Structure and dynamics of domains in lipid monolayers, Quantitative Life Sciences group seminar, Abdus Salam International Centre for Theoretical Physics (*ICTP*), Trieste, Italy, Sept. 2022.

Estructura y dinámica de dominios en monocapas lipídicas, virtual TREFEMAC, FaMAF-UNC, July 2021.

The effect of domain size polydispersity on the structural properties of lipid monolayers, virtual "Joint QLS-CMSP Virtual Summer Retreat on Heat, Water, Noise, and Life", International Centre for Theoretical Physics (ICTP), Trieste, Italy, July 2020.

The effect of domain size polydispersity on the structural and dynamical properties of lipid monolayers, University of California at Riverside, US, Nov. 2019.

The effect of domain size polydispersity on the structural and dynamical properties of lipid monolayers, North Dakota State University, US, Sep. 2019.

OTHERS

Referee in Physica E: Low-dimensional Systems and Nanostructures (Elsevier).

Responsible researcher in the project "Structure, dynamics and rheology in soft matter and biological systems". Advisor: Adolfo J. Banchio. Year 2018-2022 Funding entity: SeCYT-UNC.

Responsible researcher in the project "Dynamics and transport in soft and active matter". Advisor: Verónica I. Marconi. 2017-2019 year. Funding entity: ANPCyT. PICT-2015-0735

Member of Asociación Física Argentina.

Informatics course for high school students, programme "Jóvenes con más y mejor trabajo", Secretaría de extensión universitaria, Universidad Nacional de Córdoba, July 2010.

Informatics course for retired persons, programme "UPAMI", Secretaría de extensión universitaria, Universidad Nacional de Córdoba, Aug. 2010.

TEACHING EXPERIENCE

Teaching seniority: 20 years.

Subjects: Calculus, Introduction to Physics, Classical Physics, Optics, Thermodynamics and Statistical Mechanics, Modern Physics, Mathematical Methods for Physics.

Teaching Training Courses: Introduction to the universitary teaching, Universidad Nacional de Córdoba, 60 hrs. Dec. 2016.

ADITIONAL TRAINING

Data Science diploma FaMAF, March-Dec 2022.

Machine Learning course UNSAM, Aug-Oct 2021.

PROGRAMMING TOOLS

Programming languages: Fortran 90 (intermediate), Python (basic), Mathematica (basic).

Operative systems: Unix, Windows, IOS.

LANGUAGES

Spanish (mother tongue), **English** (fluent), **Portuguese** (basic), **Italian** (basic).