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Luciano Combi

Academic Formation

2011-2016 **Ms.S. in Physics**, *Department of physics*, Faculty of Exact Sciences, *Universidad Nacional de La Plata* (UNLP).

Average mark: 9.60/10

Degree thesis: between General Relativity and Teleparallel Gravity. Mark: 10/10. Supervisor: Gustavo E. Romero.

2017-Present **Ph.D. in Physics**, *Department of physics*, Faculty of Exact Sciences, UNLP.

Supervisor: Gustavo E. Romero.

Current position

2017-Present **Ph.D Fellow**, *CONICET*.

Supervisor: Gustavo E. Romero.

Research field: gravitation, General Relativity, cosmology, black holes, local physics and cosmology, astrophysics, foundations of physics, scientific philosophy.

Place: Instituto Argentino de Radioastronomía, Bs.As., Argentina

Ph.D. Courses

2017 **Elements of Quantum Field Theory I**.

Department of Physics, Faculty of Exact Sciences, UNLP

Professor: Horacio Falomir

Duration: 1 semester

2020 **Precision Cosmology**.

Faculty of Astronomy and Geophysics, UNLP

Professor: Claudia Scoccola

Duration: 1 semester

Fellowships

2017 **Ph.D. Research Fellow**, *CONICET*, (National Research Council).

Supervisor: Gustavo E. Romero.

Place: Instituto Argentino de Radioastronomía, Bs.As., Argentina.

Teaching and mentoring experience

Course assistant

2015 **Undergraduate Teaching Assistant** of Calculus II, Department of Mathematics, Faculty of Exact Sciences, UNLP. **Period**: 1th semester

2015 - 2017 **Undergraduate Teaching Assistant**, Department of Physics, Faculty of Exact Sciences, UNLP. Courses given: Linear Algebra, General Physics I, General Physics II

2015 - 2017 **Undergraduate Teaching Assistant** Faculty of Engineering, UNLP. **Course**: Physics I (Laboratory duties)

2017- 2019 **Graduate Teaching Assistant** Department of Physics, Faculty of Exact Sciences, UNLP. Courses given: Gravitation, General Physics III, Methods in Mathematical Physics. Mechanics I

Advisory

2019-2020 **Thesis advisor** for the master degree (*Licenciatura*) in Astronomy, Valentina Sosa Fiscella. **Topic**: High-precision timing of pulsar J0437-4715 from IAR

Workshops and Schools

2016 *Journeys in theoretical physics*, (ICTP-Perimeter Institute). **Place:** Sao Paulo, Brasil. **Duration:** 1 week (40 hs). **Funding:** ICTP-SAIFR

2016 $f(R)$ *theories of gravity*, (FCGALP, UNLP). **Place:** La Plata, Argentina. **Duration:** 1 week (40 hs).

2018 *LAPIS: Cosmology in the era of large surveys*, (FCGALP, UNLP). **Place:** La Plata, Argentina. **Duration:** 1 week (40 hs).**Funding:** UNLP

2018 *International Pulsar Timing Array, student week*, (NRAO). **Place:** New Mexico, USA. **Duration:** 1 week (40 hs). **Funding:** NANOGrav

2018 *First Biennial Midwest Summer School in Philosophy of Physics*, (University of Chicago). **Place:** Chicago, USA. **Duration:** 1 week (40 hs). **Funding:** Templeton Foundation

2018 *The Sound of Space-Time: The dawn of Gravitational Wave Science*, (ICTP-SAIFR). **Place:** Sao Paulo, Brasil.**Duration:** 3 weeks (120 hs). **Funding:** ICTP-SAIFR

2019 *North American Einstein Toolkit Workshop*, (RIT). **Place:** Rochester, USA. **Duration:** 3 days. **Funding:** CCRG-RIT

2020 *TCAN on Binary Neutron Stars*, (RIT). **Place:** Rochester, USA. **Duration:** 5 days.

Research stays abroad

2018 *West Virginia University*, **Place:** Morgantown, West Virginia, USA. **Duration** 1 month, **Funding:** NANOGrav Collaboration, **Project:** Timing of milisecond pulsar J0437-4715, with Michael Lam and Maura McLauhglin

2019 *Rochester Institute of Technology*, **Place:** Rochester, NY, USA, **Duration** 6 months, **Funding:** Center for Computational Relativity and Gravitation, RIT, **Project:** MHD simulations of spinning binary black hole systems, with Manuela Campanelli.

2021 *Perimeter Institute*, **Place:** Waterloo, Canada, **Duration** 4 months, **Funding:** Visiting Fellowhship, PI, **Project:** Modelling fast ejecta emission from binary neutron star mergers, with Daniel Siegel.

Scientific meetings

Invited presentation

2017 *PuMA proyect: Pulsar Monitoring in Argentina* (in Spanish)
Encuentro de Estudiantes de Astronomía, Buenos Aires, Argentina. September 2017

2018 *First Pulsar Observations in South America*
Binational meeting SOCHIAS-AAA, La Serena, Chile. Octubre 16

Contribution presentation

2015 *Inconsistency within the Everett interpretation of Quantum Mechanics*
First Latinamerican congress of Scientific Philosophy (In honor to Mario Bunge), Buenos Aires, Argentina. October 2015

2019 *Gravitational wave science and pulsars in Argentina*
Grav19, Cordoba, Argentina. April 12

Posters

2015 *Force between cylindric magnets: Theory and experiment* (in Spanish)
Luciano Combi, Lucas Pili, Pablo Pisani, Fernando Monticelli
100ª Anual Meeting of the Asociación Argentina de Física (AFA), September 2015

2017 *Intensive monitoring of pulsars in the south hemisphere* (in Spanish)
Luciano Combi, Jorge Combi, Federico García, Guillermo Gancio, Carlos Lousto
Anual Meeting of the Asocación Argentina de Astronomía (AAA), September 2017

2018 *Orbits in inhomogeneous expanding space-times*
Luciano Combi, Eduardo Gutiérrez
LAPIS: Cosmology in the era of large surveys, April, 2018

2018 *The IAR observatory and the PuMA project*
Luciano Combi, Guillermo Gancio, Carlos Lousto
IPTA international meeting, Albuquerque, USA

Outreach

2018 *Friday talks in the Planetarium*: Gravitational waves and pulsars
Planetarium, La Plata, Argentina

2018 **Outreach** department member of Argentine Institute of Radioastronomy
In charge of social media management and guide for primary school and high-school visits to the Institute

Languages

Native **Spanish**

English

French

Programming

Mathematica, Python, C/C++, Linux

Observational experience

Radio observations of *pulsars* with single dish Antennas at the Argentine Institute of Radioastronomy. Reduction and analysis of data. Software usage: `PRESTO`,`PSRCHIVE`,`Enterprise`,`TEMPO2`

Memberships

PuMA (*Pulsar Monitoring in Argentina* collaboration. **Status:** Full member. **Place:** Argentine Institute of Radioastronomy (IAR), La Plata, Argentina

Awards

2017 **Joaquín V. Gonzales award** for distinguished graduate of the National University of La Plata. Given by the City Government of La Plata, Capital of Buenos Aires.

Other activities

Reviewer in scientific journals and institutions:

Astrophysics and Space Science (Springer)

Gravitation and Cosmology (Springer)

Estonian Research Council (ETIS)

Publications

11 papers in peer-reviewed international journals, 7 as first author. 1 book chapter

Refereed papers in international journals

2017 **Inconsistency within the Everett interpretation of Quantum Mechanics**.
Luciano Combi, Gustavo E. Romero.
Methateoria (ISSN 1853-2322) **7**, 47-53

2017 **Gravitational energy and radiation of a charged black hole**.
Luciano Combi, Gustavo E. Romero.
Classical and Quantum Gravity, **34**, 195008

2018 **Is Teleparallel Gravity really equivalent to General Relativity?**.
Luciano Combi, Gustavo E. Romero.
Annalen der Physik, 1700175, (2018)

2019 **A note on geodesics in inhomogeneous expanding spacetimes**.
D. Perez, G.E. Romero, Luciano Combi, E.M. Gutiérrez.
Classical and Quantum Gravity, **36**, 055002

2019 **Electromagnetic fields and charges in expanding universes**.
Luciano Combi, Gustavo E. Romero
Physical Review D, **99**, 064017

2020 **Upgraded antennas for pulsar observations in the Argentine Institute of Radio astronomy**.
G. Gancio, C.O. Lousto, Luciano Combi, S. del Palacio, F. G. Lopez Armengol, J. A. Combi, F. García, P.Kornecki, A. L. Müller, E. Gutierrez, and F. Hauscarriaga
Astronomy and Astrophysics, 633, A84

2020 **Relativistic rigid systems and the cosmic expansion**.
Luciano Combi, Gustavo E. Romero
General Relativity and Gravitation, 52:93

2020 **Circumbinary Disk Accretion into Spinning Black Hole Binaries**.
F.G. Lopez Armengol, Luciano Combi, Manuela Campanelli, Scott Noble, Dennis Bowen, Mark Avara
Astrophysical Journal, (In prep.)

2020 **An approximate superimposed metric for spinning black hole binaries**.
Luciano Combi, F.G. Lopez Armengol, Manuela Campanelli, Scott Noble, Brennan Ireland, Mark Avara,Dennis Bowen, Hiroyuki Nakano
Physical Review D, (In prep.)

2020 **Accretion onto spinning black hole binaries**.
Luciano Combi, F.G. Lopez Armengol, Manuela Campanelli, Scott Noble, Mark Avara, Dennis Bowen
Astrophysical Journal, (In prep.)

2020 **PSR J0437-4715: The Argentine Institute of Radioastronomy 2019-2020 Observational Campaign**.

V. Sosa Fiscella, S. del Palacio, Luciano Combi, C.O. Lousto, F. G. Lopez Armengol, J. A. Combi, F. García, P.Kornecki, A. L. Müller, E. Gutierrez, and F. Hauscarriaga

Astronomy and Astrophysics, (In prep.)

Chapter in books

1 **Is space-time material?**.

Luciano Combi

Ontological and Epistemological Issues in Contemporary Materialism, Syntheses-Springer, 2020 (Forthcoming)

Telegrams

1 **Follow up of the radio flare from the magnetar XTE J1810-197 at 1.4 GHz**.

Del Palacio, S.; Garcia, F.; Combi, L.; Lopez Armengol, F.; Gancio, G.; Muller, A. L.; Kornecki, P., on behalf of the PuMA Collaboration

The Astronomer's Telegram, **12323**, 2018

2 **Radio observations following the recent glitch of Vela Pulsar (PSR B0833-45)**.

F. G. Lopez Armengol, C. O. Lousto, S. del Palacio , F. Garcia, L. Combi, J. A. Combi , G. Gancio , A. L. Mueller, P. Kornecki, on behalf of the PuMA Collaboration

The Astronomer's Telegram, **12482**, 2019