

FLORENCIA LAURA VIEYRO

CAREER PROFILE

- 2017-Present **Assistant Researcher**, *Instituto Argentino de Radioastronomía (IAR), National Research Council (CONICET)*.
- 2018-Present **Instructor of Introduction to Astrophysics**, *Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata*.
- Research field: High-energy astrophysics, non-thermal processes, particle acceleration and transport, neutrinos, black holes, general relativity, and high-energy plasma phenomena in general.

ACADEMIC FORMATION

- 2013 **PhD in Astronomy**, *Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, Instituto Argentino de Radioastronomía (IAR-CONICET)*.
PhD Thesis: Relativistic particle effects around accreting black holes
Supervisor: Dr. Gustavo E. Romero
- 2009 **Ms.S. in Astronomy**, *Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata*, Average Mark: 9.33/10.0.
Degree Thesis: Non-thermal radiation around accreting black holes
Supervisor: Dr. Gustavo E. Romero, **Co-Supervisor:** Dr. Gabriela S. Vila.

FELLOWSHIPS

- 2016-2017 Postdoctoral Research Fellow Department of Quantum Physics and Astrophysics, Universitat de Barcelona.
Topic: Gamma-ray emission from the interactions of extragalactic jets with stars.
Supervisor: Dr. Valenti Bosch-Ramon
- 2014-2016 Postdoctoral CONICET Research Fellow (National Research Council).
Topic: Non-thermal polarized emission in X-ray binaries.
Supervisor: Dr. Gustavo E. Romero
- 2012 Cnpq-TWAS Sandwich Program.
- Febr. 2013 Topic: Neutrino emission from collapsars.
Supervisor: Dr. Orlando L. G. Peres
- 2009-2014 PhD CONICET Research Fellow (National Research Council).
Topic: Non-thermal processes around accreting black holes.
Supervisor: Dr. Gustavo E. Romero

AWARDS

- 2009 Joaquín V. González Award, for outstanding marks during studies.
La Plata government, Buenos Aires, Argentina.

GRANTS

- 2018-2020 Young Researcher award by the Agencia Nacional de Promoción Científica y Tecnológica. Research Project: Theoretical studies on accreting black holes. PICT-2017-0898.

INSTITUTIONAL MANAGEMENT

- 2015-2016 Member of the Directive Council of the Instituto Argentino de Radioastronomía
2019-Present Member of the Directive Council of the Instituto Argentino de Radioastronomía

FORMATION OF HUMAN RESOURCES

- 2017 Eduardo M. Gutiérrez
Master Thesis co-supervisor, FCAGLP/UNLP. Supervisor: G.E. Romero
Title: *Cosmology and primordial black holes*
Date: March 14, 2017. Mark: 10/10.
- 2017-Present Eduardo M. Gutiérrez
PhD co-supervisor, FCAGLP/UNLP. Supervisor: G.E. Romero
Topic: *Study of high-energy processes around accreting black holes*
- 2019-Present Julián Astudillo
Professor Advisor, FCAGLP/UNLP.

TEACHING EXPERIENCE

- 2013-Present Instructor of Introduction to Astrophysics, FCAGLP. On leave during 2016/2017.
- 2014-2015 Teaching Assistant of Introduction to Relativistic Astrophysics and Introduction to Black Hole Astrophysics, FCAGLP.
- 2010-2013 Teaching Assistant of General Physics I/IV, Faculty of Exact Sciences, UNLP.
- 2008-2010 Teaching Assistant of Calculus I, Faculty of Exact Sciences, UNLP.
- 2006-2009 Teaching Assistant of General Physics I/II, Faculty of Exact Sciences, UNLP.
- 2007-2008 Teaching Assistant of Elementary Math, FCAGLP. Duration: two months.
- 2005-2008 Teaching Assistant of General Physics, Faculty of Natural Sciences and Museum, UNLP.

OUTREACH ACTIVITIES

- 2018 Article in the magazine Ciencia del Sur. <https://cienciadelsur.com/2018/07/24/icecube-neutrinos-rayos-cosmicos/>
- 2018 Public talks: *Gamma-ray bursts*, La Plata Planetarium.
- 2015 Public talks: *Black holes in the Universe*, La Plata Planetarium.
- 2014 Public talk: *Gamma-ray bursts*, FCAGLP.
- 2013 *Gamma-ray bursts*. Newsletter of the Instituto Argentino de Radioastronomía
- 2011 Public talk: *Black holes in action*, FCAGLP.

ACTIVITIES AS EDITOR

- 2014 Guest Editor, Proceedings of the *Second Argentinian-Brazilian Meeting - Gravitation, Astrophysics, and Cosmology*, Buenos Aires, Argentina.

ORGANIZATION OF SCIENTIFIC MEETINGS

- Oct. 2015 **High-Energy Phenomena in Relativistic Outflows (HEPRO) V**, La Plata, Argentina.
LOC Member
- Sept. 2010 **IAU Symposium 275: “Jets at all Scales”**, Buenos Aires, Argentina.
LOC Member

RESEARCH STAYS

- 2016 **Instituto de Ciencias Nucleares (UNAM)**, Mexico City, Mexico, November 11 - 18, 2016, to work in collaboration with Dr. Fabio de Colle on numerical simulations of relativistic jets and gamma-ray emission.
- 2014 **Université Paris Diderot**, Paris 7, France, May 30 - June 17, 2014, to work in collaboration with Prof. Dr. Sylvain Chaty in the study of polarized gamma-ray emission in X-ray binaries.
- 2013 **Universidad Estadual de Campinas (Unicamp)**, Brazil, August 21, 2012 - February 14, 2013, to work with Prof. Dr. Orlando L. Peres on neutrino emission from gamma ray bursts.
- 2012 **University of California, Santa Cruz (UCSC)**, USA, April 24 - July 16, 2012, to work in collaboration with Prof. Dr. Enrico Ramírez-Ruiz and Dr. Fabio de Colle in the study of instabilities in working surfaces from relativistic jets propagating in stratified media.
- 2012 **Dark Cosmology Centre**, Copenhagen University, Denmark, August 17 - 31, 2012, to learn the hydrodynamical code with adaptive mesh, developed by Dr. Fabio de Colle.
- 2011 **Departament d’Astronomia i Meteorologia**, Universitat de Barcelona (UB), Spain, July 3 - 12, 2011 and September 1 - 10, 2011, to work in collaboration with the group of Dr. Josep María Paredes in high-energy emission and neutrino production in low-mass X-ray binaries.

INVITED COLLOQUIA AND SEMINARS

- May 2018 **Non-thermal emission from the interaction of an AGN jet with a SN remnant**
Facultad de Ciencias Astronómicas y Geofísicas, Argentina.
- March 2017 **Collective non-thermal emission from the interaction of an AGN jet with stars**
Laboratoire Univers et Particules de Montpellier, France.
- Nov. 2016 **Non-thermal emission from the interaction of AGN jets with stars**
Oxford University, UK.
- Nov. 2016 **Microquasars**
Instituto de Ciencias Nucleares (UNAM), Mexico City, Mexico

- Jun. 2014 **Gamma-ray polarization from black hole coronae**
 Institut Lagrange, Paris, France.
- Sept. 2012 **Relativistic particle interactions around accreting black holes**
 Department of Cosmic Rays and Chronology, Universidad Estadual de Campinas (Unicamp), Brazil.
- Jul. 2011 **Non-thermal processes around black holes**
 Departament d'Astronomia i Meteorologia, Universitat de Barcelona, Spain.

INVITED CONFERENCE PRESENTATIONS

- Oct. 2018 **High-energy astrophysics on compact objects: Accretion on all scales**
Binational AAA-SOCHIAS meeting, La Serena, Chile.
- Apr. 2014 **Neutrino emission from gamma-ray bursts**
Second Argentinian-Brazilian Meeting - Gravitation, Astrophysics, and Cosmology, Buenos Aires, Argentina.
- Aug. 2011 **Accretion Disks around X-ray Binaries**
Workshop on Relativistic Jets in the Universe, Copenhagen, Denmark.

CONTRIBUTIONS CONFERENCE PRESENTATIONS

- Sept. 2017 **Nonthermal emission produced by the interaction of a jet with a supernova remnant**
 High-energy Phenomena in Relativistic Outflows VI, Moscow, Russia, 2017.
- Feb. 2017 **Non-thermal emission from the interaction of extragalactic jets with stars**
 ICCUB Winter Meeting, Barcelona, Spain, 2017.
- July 2016 **Non-thermal emission from the interaction of extragalactic jets with stars**
 6th International Symposium on Gamma-Ray Astronomy, Heidelberg, Germany, 2016.
- Sept. 2015 **A corona model of the outbursts of XTE J1118+480**
 58th meeting of the Asociación Argentina de Astronomía, La Plata, Argentina, 2015.
- Sept. 2013 **Neutron production in black hole coronae**
 56th meeting of the Asociación Argentina de Astronomía, Tandil, Argentina, 2013.
- Oct. 2012 **Neutrino emission from Pop III Gamma-ray bursts**
Boris Kayser minicourse/workshop on particle physics: Major Questions and Issues in Particle Physics. Sao Paulo, Brazil.
- Nov. 2010 **Neutrino transient emission from accreting black holes**
XIII Reunión Regional Latino-Americana de la UAI. Morelia, Mexico.
- Sept. 2009 **Non-thermal radiation from galactic black hole coronae**
 52nd meeting of the Asociación Argentina de Astronomía, La Plata, Argentina.
- 2009-Present 11 mural contributions presented in scientific meetings, and 10 additional contributions presented by collaborators.

LIST OF PUBLICATIONS

1. **Non-thermal emission resulting from a supernova explosion inside an extragalactic jet**
Vieyro F.L., Bosch-Ramon V, Torres-Albà N.
Astronomy & Astrophysics, **622**, A175, 2019
2. **Primordial black hole evolution in two-fluid cosmology**
Gutiérrez, E.M., Vieyro F.L., Romero G.E.
Mon. Not. R. Astron. Soc., **473**, 4, 2018
3. **Collective non-thermal emission from an extragalactic jet interacting with stars**
Vieyro F.L., Torres-Albà N., and Bosch-Ramon V.
Astronomy & Astrophysics, **604**, A57, 2017
4. **A model for the repeating FRB 121102 in the AGN scenario**
Vieyro F.L., Romero G.E., Bosch-Ramon V, Marcote B. and del Valle M.V.
Astronomy & Astrophysics, **602**, A64, 2017
5. **A model for the polarization of the high-energy radiation from accreting black holes: the case of XTE J1118+480**
Vieyro F.L., Romero G.E., and Chaty S.
Astronomy & Astrophysics, **587**, A63, 7 pp, 2016
6. **A mechanism for fast radio bursts**
Romero G.E., del Vale M.V. and Vieyro F.L.
Phys. Rev. D **39**, 2, 023001, 2016
7. **Coronal origin of the polarization of the high-energy emission of Cygnus X-1**
Romero G.E., Vieyro F.L., and Chaty S.
Astronomy & Astrophysics Letters, **562**, L7, 2014
8. **Neutrinos from collapsars**
Vieyro F.L., Romero G.E., and Peres O.L.
Astronomy & Astrophysics, **558**, A142, 2013
9. **Nonthermal processes and neutrino emission from the black hole GRO J0422+32 in a bursting state**
Vieyro F.L., Sestayo Y., Romero G.E., and Paredes J.M.
Astronomy & Astrophysics, **546**, A46, 2012
10. **Particle transport in magnetized media around black holes and associated radiation**
Vieyro F.L., Romero G.E.
Astronomy & Astrophysics, **542**, A7, 2012
11. **Neutrino flares from black holes corone**

Vieyro F.L., Romero G.E.
Advances in Space Research, **48**, pp. 979-984, 2011

12. **Non-thermal processes around accreting galactic black holes**
Romero G.E., **Vieyro F.L.**, Vila G.S.
Astronomy & Astrophysics, **519**, A109, 2010

COMPLETE PAPERS IN BOOKS AND PROCEEDINGS

1. **Non-thermal emission produced by the interaction of a jet with a supernova remnant**
Vieyro F.L., Bosch-Ramon V., Torres-Albà N.
International Journal of Modern Physics D, **27**, 1844021, 2018
2. **Non-thermal emission from the interaction of extragalactic jets with stars**
Vieyro F.L., Torres-Albà N., Bosch-Ramon V.
AIP Conference Proceedings, 1792, 050012, 2017
3. **Characterizing the stellar populations interacting with AGN jets**
Torres-Albà N., Bosch-Ramon V., **Vieyro F.L.**
AIP Conference Proceedings, 1792, 050031, 2017
4. **Relativistic Particles in Magnetized Media around Black Holes**
Romero G.E., **Vieyro F.L.**
Proceedings of the Thirteenth Marcel Grossman Meeting on General Relativity, eds: K. Rosquist, R. T., Jantzen, R. Ruffini, World Scientific, 1358, 2015
5. **Neutrino emission from gamma-ray bursts**
Vieyro F.L.
Proceedings of the Second Argentinian-Brazilian Meeting - Gravitation, Astrophysics, and Cosmology, eds: Vila, G. S., Vieyro, F. L., Fabris, J. C., AAA Workshop, 7, ISBN: 9789872494827, 2015
6. **Neutron production in black hole coronae and proton loading of jets**
Vila G.S., **Vieyro F.L.**, and Romero G.E.
International Journal of Modern Physics S, **28**, 1460191, 2014
7. **Gravitational Lensing of Neutrino from Collapsars**
Vieyro F.L., Romero G.E.
Gravitation, Relativistic Astrophysics, and Cosmology, eds: F.T. Falciano and L.J. Pellizza, Cambridge University Press, 2014
8. **Neutron production in black hole coronae**
Vieyro F.L., Vila G.S., Romero G.E.
Bol. Asoc. Arg. Astron. **56**, 343-346, 2013
9. **Episodic gamma-ray and neutrino emission from the low mass X-ray binary GRO J0422+32**
Vieyro F.L., Romero G.E.
High Energy Gamma-Ray Astronomy, eds: F. Aharonian, W. Hofmann, F. Rieger, AIP Conference Proceedings 1505, 410-413, 2012

10. **Gravitational lensing of cosmological neutrino sources**
Romero G.E., **Vieyro F.L.**
International Journal of Modern Physics S, **3**, pp. 475-482, 2011
11. **Flares from galactic black holes**
Vieyro F.L., Romero G.E.
RMxAC Serie de Conferencias, Eds. W. J. Henney & S. Torres-Peimbert, 40, pp. 153-154, 2011
12. **Transient high-energy flares from accreting black holes**
Vieyro F.L., Romero G.E.
Proceedings of the International Astronomical Union, Vol. 6, Symposium S275, pp. 313-314, 2011
13. **Gamma-ray flares from black hole coronae**
Vieyro F.L., Romero G.E.
Proceedings of Science, PoS (tsra2010), 174R, 2010
14. **Non-thermal radiation from Cygnus X-1 corona**
Vieyro F.L., Romero G.E., Vila G.S.
International Journal of Modern Physics D **19**, pp. 783-789, 2010
15. **Non-thermal radiation from galactic black hole coronae**
Vieyro F.L., Romero G.E., Vila G.S.
Bol. Asoc. Arg. Astron. **52**, pp. 263-266, 2009