

# EDUARDO MARIO GUTIÉRREZ

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## PERSONAL DATA

Name Eduardo Mario Gutiérrez  
Date of Birth January 14th, 1993  
Nationality Argentinian

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## CAREER PROFILE

- 2017-present **Doctoral Fellow**, *Instituto Argentino de Radioastronomía (IAR-CONICET)*.  
Research field: high-energy astrophysics, non-thermal processes, particle acceleration and transport, black holes, general relativity, accretion, and plasma phenomena in general.
- 2018-present **Teaching Head of Practical Assignments**, *Facultad de Ingeniería, Universidad Nacional de La Plata*.

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## ACADEMIC FORMATION

- 2017-present **PhD in Astronomy (in progress)**, *Facultad de Ciencias Astronómicas y Geofísicas (FCAG), Universidad Nacional de La Plata (UNLP)*.  
**PhD Thesis: Physics in the vicinity of accreting black holes**  
**Supervisor:** Dr. Gustavo E. Romero  
**Co-Supervisor:** Dra. Florencia L. Vieyro  
Working place: Instituto Argentino de Radioastronomía (IAR-CONICET)
- 2017 **M.Sc. in Astronomy**, *Facultad de Ciencias Astronómicas y Geofísicas (FCAG), Universidad Nacional de La Plata (UNLP)*. *Average Mark: 9.79/10.0*.  
**Thesis: Cosmology and primordial black holes. Mark: 10.0/10.0**  
**Supervisor:** Dr. Gustavo E. Romero,  
**Co-Supervisor:** Dra. Florencia L. Vieyro

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## POST-GRADUATE COURSES

- Seminar of Particles and Fields**, *Facultad de Ciencias Exactas, Universidad Nacional de La Plata*.  
Professor: Dr. Martín Schwellingner  
Final Mark: 10.0/10.0  
One semester
- Introduction to Scientific Philosophy**, *Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata*.  
Professor: Dr. Gustavo E. Romero  
One semester

**Introduction to Black Hole Astrophysics**, *Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata.*

Professor: Dr. Gustavo E. Romero

One semester

**Introduction to Magnetohydrodynamics**, *Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata.*

Professor: Dra. Ana María Platzeck

One semester

**Computational Tools for Scientists**, *Instituto de Física de Líquidos y Sistemas Biológicos.*

Professor: Dr. Manuel Carlevaro

One semester

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## FELLOWSHIPS

2017-2022 PhD CONICET Research Fellow (National Research Council).

Topic: Physics in the vicinity of accreting black holes.

Supervisor: Dr. Gustavo E. Romero

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## PROFESSIONAL MEMBERSHIPS

2017-Present Member of GARRA: Group of Relativistic Astrophysics and Radio Astronomy (<http://garra.iar.unlp.edu.ar>)

2018-Present Adherent member of the Argentinian Astronomical Society

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## AWARDS

December 2017 **Joaquín V. González Award**, *for the highest average mark of the FCAG-UNLP, given by the government of La Plata.*

November 2017 **2016 Distinguished Graduate**, *for the highest average mark in Astronomy, given by the Universidad Nacional de La Plata.*

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## INSTITUTIONAL MANAGEMENT

2013 Member of the Adviser Committee who selected a Teaching Assistant of Elementary Physics III, FCAGLP.

2013 Member of the Adviser Committee who selected a Teaching Assistant of Elementary Astronomy, FCAGLP.

2014 Member of the Electoral Board of the elections in the FCAGLP.

2014 Member of the Adviser Committee who selected an Associate Professor of Elementary Physics III, FCAGLP.

2015 Member of the Adviser Committee who selected an Instructor of Partial Differential Equations, FCAGLP.

2016 Member of the Electoral Board of the elections in the FCAGLP.

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## TEACHING EXPERIENCE

- 09/18-Present Teaching head of practical assignments, Mathematics A, Faculty of Engineering, UNLP.
- 08/19-03/20 Graduate Teaching Assistant of Relativistic Astrophysics, Faculty of Astronomical and Geophysical sciences (FCAG), UNLP.
- 03/19-08/19 Graduate Teaching Assistant of Electromagnetism, Faculty of Astronomical and Geophysical sciences (FCAG), UNLP.
- 03/18-08/18 Graduate Teaching Assistant of Physics I, Faculty of Engineering, UNLP.
- 03/18-02/19 Graduate Teaching Assistant of Mathematics A, Faculty of Engineering, UNLP.
- 10/15-02/18 Undergraduate Teaching Assistant of Classical Mechanics, FCAGLP.
- 09/15-03/18 Undergraduate Teaching Assistant of Calculus I, Faculty of Exact Sciences, UNLP.
- 08/14-07/15 Undergraduate Teaching Assistant of Physics I, Faculty of Engineering, UNLP.
- 03/14-09/15 Undergraduate Teaching Assistant of Mathematics A, Faculty of Engineering, UNLP.
- 2017 Undergraduate Teaching Assistant of the Summer Nivelation Course 2017, FCAGLP. Duration: two months.
- 2016 Undergraduate Teaching Assistant of the Summer Nivelation Course 2016, FCAGLP. Duration: two months.
- 2014 Undergraduate Teaching Assistant of the Summer Nivelation Course 2014, FCAGLP. Duration: two months.

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## OUTREACH ACTIVITIES

- 2019 Public talk: *The first image of a black hole: what does it show us?*, La Plata Planetarium
- 2017 Public talk: *What is a black hole?*, La Plata Planetarium

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## SCIENTIFIC MEETINGS

### ORGANIZATION

- Sep. 2015 **1er Encuentro Latinoamericano de Filosofía Científica, en homenaje a Mario Bunge**, Ciudad Autónoma de Bs. As., Argentina

### ATTENDANCE

- Oct. 2011 **Primera Reunión Binacional de la Asociación Argentina de Astronomía y la Sociedad Chilena de Astronomía**, San Juan, San Juan, Argentina.
- Aug. 2013 **Congreso de Estudiantes de Ciencia y Tecnología Argentina "CONNECTAR"**, La Plata, Bs. As., Argentina.
- Sep. 2013 **56va Reunión Anual de la Asociación Argentina de Astronomía**, Tandil, Bs. As., Argentina.
- Sep. 2013 **56va Reunión Anual de la Asociación Argentina de Astronomía "ASTRO 2013"**, Tandil, Bs. As., Argentina.
- Sep. 2014 **2da. Edición del Encuentro Nacional de Estudiantes de Astronomía "ENEA"**, La Plata, Bs. As., Argentina.
- Oct. 2014 **2da. Edición del Congreso de Estudiantes de Ciencia y Tecnología Argentina "CONNECTAR"**, La Plata, Bs. As., Argentina.

- Apr. 2015 **6ta. Conferencia organizada por el Grupo de Relatividad General y Gravitación de la FaMAF, UNC "Grav15"**, La Falda, Córdoba, Argentina.
- Sep. 2015 **3ra. Edición del Congreso de Estudiantes de Ciencia y Tecnología "CONECTAR"**, Montevideo, Uruguay.
- Sep. 2015 **58va Reunión Anual de la Asociación Argentina de Astronomía**, La Plata, Bs. As., Argentina.
- Sep. 2017 **60va Reunión Anual de la Asociación Argentina de Astronomía**, Malargue, Mendoza, Argentina.
- Sep. 2018 **International Conference on Black Holes as Cosmic Batteries: UHE-CRs and Multimessenger Astronomy**, Foz do Iguazu, Paraná, Brasil.
- Oct. 2018 **Second Binational Meeting AAA-SOCHIAS**, La Serena, Coquimbo, Chile.

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## SCHOOLS

- Jul. 2016 **IFT-Perimeter-SAIFR Journeys into Theoretical Physics**, ICTP-SAIFR, Sao Paulo, Brasil, from July 18 to 23, 2016. 36 hours.
- May 2017 **SPSAS-HighAstro**, São Paulo School of Advance Science in High Energy Astrophysics in the CTA era, Instituto de Astronomia, Geofísica e Ciências Atmosféricas da Universidade de São Paulo, São Paulo, Brasil, from May 21 to 31, 2017. 80 hours.
- March 2019 **ISAPP 2019**, Cosmic Ray Vision from the Southern Sky, Malargue, Mendoza, Argentina, from March 1 to 9, 2019. 60 hours.
- August 2019 **School on High Energy Astrophysics**, ICTP-SAIFR, São Paulo, São Paulo, Brasil, from August 5 to 16, 2019. 80 hours.

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## CONTRIBUTION CONFERENCE PRESENTATIONS

- May 2017 **Accreting primordial black holes in the early universe.**  
Poster contribution  
SPSAS-HighAstro.
- Sep. 2017 **Gas de agujeros negros cosmológicos.**  
Oral contribution  
60va Reunión Anual de la Asociación Argentina de Astronomía
- Sep. 2017 **Discos de acreción calientes.**  
Poster contribution  
60va Reunión Anual de la Asociación Argentina de Astronomía
- Sep. 2018 **Electromagnetic cascades above black holes.**  
Poster contribution  
Black Holes As Cosmic Batteries
- Oct. 2018 **Radiation from hot accretion flows.**  
Oral contribution  
2nd Binational Meeting AAA-SOCHIAS
- Oct. 2019 **Neutron-driven winds in hot accretion flows.**  
Oral contribution  
61va Reunión Anual de la Asociación Argentina de Astronomía

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## PUBLICATIONS

### REFEREED PAPERS IN INTERNATIONAL JOURNALS

- 1 **Cosmic rays from the nearby starburst galaxy NGC 253: the effect of a low luminosity active galactic nucleus.**  
E. M. Gutiérrez, G. E. Romero, F. L. Vieyro  
Mon. Not. R, Astron. Soc., 494, 2 (2020)
- 2 **A nonthermal bomb explains the near-infrared flare of Sgr A\*.**  
E. M. Gutiérrez, R. Nemmen, F. Cafardo  
The Astrophys. J. Lett., 891, 2, L36 (2020)
- 3 **Upgraded Antennas for Pulsar Observation in the Argentine Institute of Radio Astronomy.**  
G. Gancio, C. O. Lousto, L. Combi, S. del Palacio, F. López Armengol, J. Combi, F. García, P. Kornecki, A. L. Muller, E. M. Gutiérrez, F. Huscarriaga, G. Mancuso  
Astronomy and Astrophysics, 633, A84 (2020)
- 4 **A note on geodesics in inhomogeneous expanding spacetimes.**  
D. Pérez, G. E. Romero, L. Combi, E. M. Gutiérrez  
Class. Quantum Grav., 36, 5 (2019)
- 5 **Primordial black hole evolution in two-fluid cosmology.**  
E. M. Gutiérrez, F. L. Vieyro, G. E. Romero  
Mon. Not. R, Astron.Soc., 473, 5385 (2018)

#### REFEREED PROCEEDINGS IN NATIONAL JOURNALS

- 1 **Radiation from hot accretion flows.**  
E. M. Gutiérrez, F.L. Vieyro, G.E. Romero  
BAAA, Vol. 61 (2019)
- 2 **Gas de agujeros negros cosmológicos.**  
E. M. Gutiérrez, F.L. Vieyro, G.E. Romero  
BAAA, Vol. 60 (2018)

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#### OTHER SKILLS

##### Language skills

Spanish: native

English: upper-intermediate level

Portuguese: intermediate level

##### Computational skills

Fortran 77/90/95, C/C++, Python, L<sup>A</sup>T<sub>E</sub>X