

# Carlos A. Benavides-Gallego

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## Curriculum Vitae

### Personal information

Nationality Colombian

### Education

- 2017–2020 **Ph.D. in Theoretical Physics**, *Fudan University*, Shanghai, China.  
2011–2013 **M.Sc. in Astronomy**, *National University of Colombia*, Bogotá, Colombia.  
2005–2011 **B.Sc. in Physics**, *National University of Colombia*, Bogotá, Colombia.

### Experience

#### Research

- 2022–Present **Postdoc Fellow**, *Shanghai Jiao Tong University*.  
2020–2022 **Postdoc Fellow**, *Shanghai Astronomical Observatory*.  
2017–2020 **Graduate student**, Center for Field Theory and Particle Physics and Department of Physics, Fudan University.  
**Ph.D. Advisor:** Prof. Cosimo Bambi.  
**Dissertation title:** “Gravitational lensing, particle motion and quintessence.”  
2011–2013 **Graduate student**, National Astronomical Observatory. National University of Colombia, Bogotá.  
**M.Sc. Advisor:** Prof. Eduard Larrañaga.  
**Dissertation title:** “Gravitational lensing in the strong Field limit for Kar’s Metric”  
2005–2011 **Undergraduate student**, Physics Department, National University of Colombia, Bogotá.  
**B.Sc. Advisor:** Prof. José Robel Arenas.  
**Dissertation title:** “Cosmological singularities”

#### Educational projects

- 2013–2015 **Mathematics and Engineering Department**, *Konrad Lorenz U*, Bogotá.  
○ **Project I:** Construction of a 6 inch f/8 Telescope. See the following link for the published paper <https://innovacionyciencia.com/public/revista/85>.  
○ **Project II:** Construction of a radio telescope.

#### Vocational

- 2014–2017 **Lecturer**, *Catholic University of Colombia*. Bogotá, Colombia., I was in charge of the courses.  
○ Newtonian mechanics and laboratory.

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- Oscillations and waves and laboratory.
  - Electromagnetism and laboratory.
  - Linear algebra.
- 2014-2016 **Lecturer**, *Escuela de Ingenieros Militares. Bogotá, Colombia*, I was in charge of the courses.
- Integral calculus.
  - Vector calculus.
  - Differential equations.
- 2011-2013 **Teaching assistant**, *Universidad Nacional de Colombia. Bogotá, Colombia*, I was in charge of the course.
- Laboratory of electricity and magnetism.

## Fellowships, scholarships, and awards

- 2020-2022 President's International Fellowship Initiative (PIFI), Chinese Academy of Science.
- 2017-2020 China Scholarship Council (CSC), Grant No. 2017GXZ019022.
- 2012-2013 Scholarship. M.Sc. Astronomy (First term).
- 2011 Tuition waiver. M.Sc. Astronomy (Second term ).
- 2011 Scholarship holder, School of Science. B.Sc. Physics (First term).

## Computer skills

- 1 Mathematica.
- 2 Python.
- 3 Latex.

## Conferences/Seminars Proceedings

- 2019 Seminar at Institute for Theoretical Physics and Cosmology Zhejiang University of Technology Hangzhou, China. **Talk title: Charged particle motion and electromagnetic field in gamma spacetime**
- 2019 Recent Progress in Relativistic Astrophysics, Shanghai, China, 6–8 May 2019. Fudan University, Center for Field Theory and Particle Physics and Department of Physics. **Talk title: Boosted Kerr Blackhole in the presence of plasma.**
- 2019 Poster at Asian-Pacific Winter School and Workshop on Gravitation and Cosmology. February 11 - February 15, 2019. Kyoto University, Yukawa Institute for Theoretical Physics, Kyoto, Japan. **Poster title: Gravitational lensing for a boosted Kerr Blackhole in the presence of plasma.**
- 2012 Poster at the 3<sup>th</sup> Colombian Congress of Astronomy and Astrophysics (CoCoA) Universidad Industrial de Santander, Bucaramanga, Colombia. **Poster title: Gravitational lensing in the strong field limit: Bozza's Method.**
- 2012 Summer School. Solar Astrophysics Modern Trends and Techniques. National Astronomical Observatory, National University of Colombia, Bogotá D.C.

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- 2011 Poster at the First School of Numerical Relativity. National Astronomical Observatory, National University of Colombia, Bogotá D.C. **Poster title: Space-Time: properties and singularity theorems.**

## Student mentoring

- \* As a postdoc researcher, I have mentored the following students, guiding them in the writing and correcting process of academic papers and their submission to scientific journals.
  - Farrux Abdulxamidov. National University of Uzbekistan.
  - Jose Miguel Ladino. Universidad Nacional de Colombia.
  - Qianyun Yun. Shanghai Astronomical Observatory.

## Publications

- \* **Carlos A. Benavides-Gallego**, Swarnim Shashank and Haiguang Xu. *Observing the eye of the storm I: testing regular black holes with LVK and EHT observations*. Submitted to PRD. e-Print: 2411.13897 [gr-qc]. **Citations: 0**
- \* **Carlos A. Benavides-Gallego** and Eduard Larrañaga. *The Image of Scalar Hairy Black Holes with Asymmetric Potential*. Submitted to Eur.Phys.J.Plus July 2024. e-Print: 2411.13049 [gr-qc]. **Citations: 0**
- \* Farrux Abdulxamidov, **Carlos A. Benavides-Gallego**, Bakhtiyor Narzilloev, Ibrar Hussain, Ahmadjon Abdujabbarov, Bobomurat Ahmedov and Haiguang Xu *Dynamics of spinning test particles around the Kerr–Newman–NUT black hole with quintessence in the Rastall gravity*. Eur.Phys.J.Plus 138 (2023) 7, 635. **Citations: 12.**
- \* **Carlos A. Benavides-Gallego**, Jose Miguel Ladino, Eduard Larrañaga. *Comparing spin supplementary conditions for particle motion around traversable wormholes*. Phys.Rev.D 108 (2023) 6, 064050, e-Print: 2306.17394 [gr-qc]. **Citations: 3.**
- \* Jose Miguel Ladino, **Carlos A. Benavides-Gallego**, Eduard Larrañaga, Javlon Rayimbaev, Farrux Abdulxamidov *Charged spinning and magnetized test particles orbiting quantum improved charged black holes*. Eur.Phys.J.C 83 (2023) 11, 989, e-Print: 2305.15350 [gr-qc]. **Citations: 15.**
- \* **Carlos A. Benavides-Gallego**, Wen-Biao Han *Gravitational waves and electromagnetic radiation from charged black hole binaries*. Symmetry 15 (2023) 537, e-Print: 2209.00874 [gr-qc]. **Citations: 4.**
- \* Farrux Abdulxamidov, **Carlos A. Benavides-Gallego**, Wen-Biao Han, Javlon Rayimbaev, A. A. Abdujabbarov *Spinning test particle motion around a rotating wormhole*. Phys.Rev.D 106 (2022) 2, 024012, e-Print: 2205.11727 [gr-qc]. **Citations: 18.**
- \* **Carlos A. Benavides-Gallego**, Wen-Biao Han, *Phenomenological model for the electromagnetic response of a black hole binary immersed in magnetic field*. Submitted to Phys.Rev.D (2021), e-Print: 2111.04323 [gr-qc]. **Citations: 4.**
- \* **Carlos A. Benavides-Gallego**, Wen-Biao Han, Daniele Malafarina, Bobomurat Ahmedov and A. A. Abdujabbarov *Spinning test particle motion around a traversable wormhole*. Phys.Rev.D 104 (2021) 8, 084024, e-Print: 2107.07998 [gr-qc]. **Citations: 20.**

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- \* Qianyun Yun, Wen-Biao Han, Xingyu Zhong and **Carlos A. Benavides-Gallego**, *Surrogate model for gravitational waveforms of spin-aligned binary black holes with eccentricities*. [Phys.Rev.D 103 \(2021\) 12, 124053](#), e-Print: 2104.03789 [gr-qc]. **Citations: 26**.
- \* **Carlos A. Benavides-Gallego**, A. A. Abdujabbarov, Daniele Malafarina and Cosimo Bambi *Quasiharmonic oscillations of charged particles in static axially symmetric space-times immersed in a uniform magnetic field*. [Phys.Rev.D 101 \(2020\) 12, 124024](#), e-Print: 2005.07554 [gr-qc]. **Citations: 7**.
- \* **Carlos A. Benavides-Gallego**, A.A. Abdujabbarov, Cosimo Bambi. *Rotating and non-linear magnetic-charged black hole surrounded by quintessence*. [Phys.Rev.D 101 \(2020\) 4, 044038](#), e-Print: 1811.01562 [gr-qc]. **Citations: 29**.
- \* **Carlos A. Benavides-Gallego** and A. A. Abdujabbarov. *Boosted Kerr black hole in the presence of plasma*. MDPI (2019), Proceedings. **Citations: 0**.
- \* **Carlos A. Benavides-Gallego**, A. A. Abdujabbarov, Daniele Malafarina, Bobomurat Ahmedov, and Cosimo Bambi. *Charged particle motion and electromagnetic field in  $\gamma$  spacetime*. [Phys.Rev. D99 \(2019\) no.4, 044012](#). [arXiv:1812.04846 [gr-qc]]. **Citations: 58**.
- \* **Carlos A. Benavides-Gallego**, A.A. Abdujabbarov, Cosimo Bambi. *Gravitational lensing for a boosted Kerr black hole in the presence of plasma*. [Eur.Phys.J. C78 \(2018\) no.9, 694](#). [arXiv:1804.09434 [gr-qc]]. **Citations: 39**.
- \* Hrishikesh Chakrabarty, **Carlos A. Benavides-Gallego**, Cosimo Bambi and Leonardo Modesto. *Unattainable extended spacetime regions in conformal gravity*. [JHEP 1803 \(2018\) 013](#). [arXiv:1711.07198 [gr-qc]]. **Citations: 26**.
- \* **Carlos A. Benavides-Gallego**, Alejandro Cardenas-Avendano, Alexis Larranaga. *Gravitational Lensing in the Strong Field Limit for Kar's Metric*. [International Journal of Theoretical Physics Volume 55](#). [arXiv:1410.4190 [gr-qc]]. **Citations: 8**.
- \* Alexis Larranaga, **Carlos A. Benavides-Gallego**, Christian Rodriguez. *A Regular Black Hole in the Braneworld*. [Romanian Journal of Physics 59 number 1-2](#).

## Scientific dissemination

- \* **Carlos A. Benavides-Gallego**. *Todos tenemos derecho a explorar el cosmos. Sobre la construcción de un telescopio reflector casero (Everybody has the right to explore the sky: On the construction of a Newtonian telescope)* Asociación Colombiana para el avance de la ciencia XXIII number 2 (2016) page 82. <https://innovacionyciencia.com/public/revista/85>.

## Books translations

- \* **Carlos A. Benavides-Gallego** and Alejandro Cardenas-Avendano. *Introducción a la relatividad general. Un Curso para estudiantes de Física*. (2021) [https://www.reverte.com/libro/introduccion-a-la-relatividad-general\\_125091/](https://www.reverte.com/libro/introduccion-a-la-relatividad-general_125091/). Translation into Spanish from the English version: Introduction to General Relativity by Cosimo Bambi. <https://link.springer.com/book/10.1007%2F978-981-13-1090-4>

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## Languages

Spanish **Mother tongue**

English **Second tongue**

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## References

- **Prof. Cosimo Bambi** (Ph.D. supervisor)  
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- **Prof. Wenbiao Han**  
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