

CONTACT
INFORMATION

Adrian William Romero Jorge

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EDUCATION

- Ph.D. Student**, Goethe University Frankfurt, Germany.
Supervisor: Prof. Dr. Elena Bratkovskaya, Prof. Dr. Laura Sagunski **2023 - present**
- M.S. Physics**, University of Havana, Cuba.
Supervisors: Prof. Dr. A. Martínez Pérez, Prof. Dr. E. Rodríguez Querts **2022 - 2023**
- B.S. Physics**, University of Havana, Cuba.
Supervisors: Prof. Dr. A. Martínez Pérez, Prof. Dr. E. Rodríguez Querts. Five-years course plus a thesis **2016 - 2021**

POSTGRADUATES
COURSES

University of Havana & Higher Institute of Technologies and Applied Sciences, Cuba.

- Introduction to General Relativity Theory
- Automation of Physics Experiments with the Arduino Platform
- Standard Model of Particles. Mathematical Methods
- Introduction to Quantum Fields in Classic Contexts
- Quantum Field Theory
- Cosmology
- Introduction to Standard Model of Particles
- Nonlinear Quantum Electrodynamics

COMPLEMENTARY
EDUCATION

Institute for Theoretical Physics, Goethe University, Frankfurt, Germany.

- Physics of Strongly Interacting Matter
- Dynamical models for relativistic heavy-ion collisions

Galileo Galilei Institute (GGI), Italy

- School: Direct Detection across Dark Matter mass ranges 2025 (TME)
- School: Frontiers in Nuclear and Hadronic Physics 2026 (FNHP)

Helmholtz Graduate School for Hadron and Ion Research (HGS-HIRE), Germany.

- Making an Impact as an Effective Researcher
- Leading Teams in a Research Environment
- Career and Leadership
- Machine Learning from Scratch

PRESENTATIONS
& EVENTS

XXX Identification of Dark Matter 2026 (iDM) **2026**
Talk: "Combined constraints on dark photons from high-energy collisions, cosmology, and astrophysics". Zaragoza, Spain.

Particle Physics Seminar at Bonn University **2026**
Invitation to give a seminar: "Combined constraints on dark photons from high-energy collisions, cosmology, and astrophysics". Bonn, Germany.

- Theory Meets Experiments 2025: Dark Matter Direct Detection (TME)**
Lightning Talk: "Search for dark photons in heavy-ion collisions". Florence, Italy. 2025
- IV DarkMatter@Bonn Meeting (DMLab)**
Talk: "Combined constraints on dark photons from high-energy collisions, cosmology, and astrophysics". Bonn, Germany. 2025
- V Dark Matter Conference: From the Smallest to the Largest Scale (DM)**
Poster and Flash Talk: "Constraining Dark Photon Kinetic Mixing in Heavy-Ion Collisions from SIS to LHC energies". Santander, Spain. 2025
- XXXI International Conference on Ultra-relativistic Nucleus-Nucleus Collision (QM)**
Poster: "Electromagnetic emission from strongly interacting hadronic and partonic matter created in heavy-ion collisions. Frankfurt, Hesse, Germany" 2025
- III Workshop on Heavy Ions Physics and Compact Stars (HIPSTARS)**
Talk: "Exploring Dark Photon Production and Kinetic Mixing Constraints in Heavy-Ion Collisions". ICIMAF, Havana, Cuba. 2024
- 42nd International Conference on High Energy Physics (ICHEP)**
Talk: "Search for dark photon in heavy ion collisions". Prague, Czech Republic. 2024
- GET INVolved Program by GSI-FAIR**
Research training with Dr. Elena Brakovskaya. GSI, Darmstadt, Germany. 2022
- II Workshop on Heavy Ions Physics and Compact Stars (HIPSTARS).**
Talk: "On the propagation of photons in rotating neutron stars including quantum and gravitational effects". ICIMAF, Havana, Cuba. 2022
- Proposals for the Award of the Nuclear Energy Agency and Advanced Technologies (AENTA).**
Talk: "Delay of the magnetized photon in astrophysical scenarios". Cuban National Hotel, Havana, Cuba. 2021
- I Workshop on Heavy Ions Physics and Compact Stars (HIPSTARS).**
Talk: "The photon time delay in strong magnetic field". ICIMAF, Havana, Cuba. 2020
- XV Symposium of the Cuban Physics Society.**
Poster: "The photon time delay in magnetized vacuum magnetosphere". University of Havana, Havana, Cuba. 2020
- VI International Sym. on Strong Electromagnetic Fields and Neutron Stars SMFNS). and V Caribbean Sym. on Cosmology, Gravitation, Nuclear and Astroparticle Physics (STARS).**
Talk: "The magnetized photon time delay". Varadero, Cuba. 2019
- SCHOOLS
- III German-Cuban Summer School by DAAD-FAIR Program.**
Participation. ICIMAF, Havana, Cuba. 2023
- European Summer School on Science Communication (ES3C) by DAAD-FAIR Program.**
Participation. FIAS, Frankfurt, Germany. 2022

	II German-Cuban Summer School by DAAD-FAIR Program. <i>Talk: “Photon time delay in neutron stars magnetosphere”. ICIMAF, Havana, Cuba.</i>	2022
	I German-Cuban Summer School by DAAD-FAIR Program. <i>Participation. Havana, Cuba.</i>	2019
WORKSHOPS AS UNDERGRADUATE STUDENT	Student Scientific Forum of Havana University. <i>Participation. University of Havana, Havana, Cuba.</i>	2022
	XXXVII Student Scientific Workshop – Physics Faculty. <i>Talk: “Photon time delay in neutron stars magnetosphere”. Faculty of Physics, University of Havana, Havana, Cuba.</i>	2021
	VI Student Congress of Scientific and Technological Research (CEICYT). <i>Online Talk: “Photon time delay modeling in the magnetosphere of pulsars with ultra-intense magnetic fields”. Dominican Republic.</i>	2021
	XXXVI Student Scientific Workshop – Physics Faculty. <i>Participation. Faculty of Physics, University of Havana, Havana, Cuba.</i>	2020
	XXXV Student Scientific Workshop – Physics Faculty. <i>Talk: “Delay of magnetized photons”. Faculty of Physics, University of Havana, Havana, Cuba.</i>	2019
	XXXIV Student Scientific Workshop – ICIMAF. <i>Talk: “Delay of photons in magnetized vacuum”. Faculty of Physics, University of Havana, Havana, Cuba.</i>	2018
	XXXIII Student Scientific Workshop – Physics Faculty. <i>Talk: “Quantum dynamics of vibrations between the rings of benzene”. Faculty of Physics, University of Havana, Havana, Cuba.</i>	2017
PEER-REVIEWED PUBLICATIONS	A. W. Romero Jorge , L. Sagunski, Guan-Wen Yuan, T. Song and E. Brakovskaya, “ <i>Combined constraints on dark photons from high-energy collisions, cosmology, and astrophysics</i> ”, Phys. Rev. D 113 , 055052, arXiv.2601.15066, 2026.	
	A. W. Romero Jorge , E. Brakovskaya, T. Song and L. Sagunski, “ <i>Constraints on Kinetic Mixing of Dark Photons from Dilepton Spectra</i> ”, Phys. Rev. C, 112 , 054905, arXiv.2507.11163, 2025.	
	A. W. Romero Jorge , T. Song, Q. Zhou and E. Brakovskaya, “ <i>Electromagnetic emission from strongly interacting hadronic and partonic matter created in heavy-ion collisions</i> ”, Phys. Rev. C, 111 , 064904, arXiv.2503.05253, 2025.	
	A. W. Romero Jorge , A. Pérez Martínez, and E. Rodríguez Querts, “ <i>Nonlinear electrodynamics for the vacuum of Dirac materials. Photon magnetic properties and radiation pressures</i> ”, Phys. Rev. A, 110 , 012201, arXiv.2402.01042, 2024.	
CONFERENCE PROCEEDINGS	A. W. Romero Jorge , E. Brakovskaya, T. Song, and L. Sagunski, “ <i>Exploring Dark Photon Production and Kinetic Mixing Constraints in Heavy-Ion Collisions</i> ”, Astron. Nachr., 346 : e20240132, arXiv.2412.02536, 2024.	
	A. W. Romero Jorge , E. Brakovskaya, and L. Sagunski, “ <i>Search for dark photons in heavy-ion</i>	

collisions”, Proceedings of 42nd International Conference on High Energy Physics, PoS (ICHEP2024), **290**, arXiv.2409.20141, 2024.

A. Pérez Martínez, M. Pérez García, E. Rodríguez Querts and **A. W. Romero Jorge**, “*Vacuum properties and astrophysical implications*”, *16th Marcel Grossmann Meeting*, 3756-3761, 2023.

A. W. Romero Jorge, E. Rodríguez Querts, A. Pérez Martínez and H. Pérez Rojas, “*The photon time delay in magnetized medium magnetosphere*”, *Astron. Nachr.*, **342**, 382-387, 2021.

A. W. Romero Jorge, E. Rodríguez Querts, A. Pérez Martínez et al., “*The photon time delay in magnetized vacuum magnetosphere*”, *Astron. Nachr.*, **340**, 852-856, arXiv.1912.02904 2020.

HONORS
& AWARDS

Giersch Excellence Award 2025.

The grant is awarded for outstanding work in the thesis project in the past year. **2024, 2025**

Karin and Carlo Giersch Scholarship.

Awarded for Ph.D. studies in physics **2023**

Graduated with Honors (summa cum laude).

Awards for the best graduate of the career and most outstanding results in the scientific research. Faculty of Physics, University of Havana. **2021**

Award for the scientific result of the science and technological innovation system of the Nuclear Energy and Advance Technologies Agency (AENTA). **2021**

*To the work “Magnetized photon delay in astrophysical scenarios” by the authors **A. W. Romero Jorge**, **E. Rodríguez Querts** and **A. Pérez Martínez**.*

First place in the Student Scientific Workshop – Physics Faculty.

At the theoretical physics committee. **2021**

TEACHING
EXPERIENCE

Faculty of Physics, University of Havana, Havana, Cuba.

Teaching Assistant **2018-2019**

Experimental physics laboratory (Mechanics) and on the computational methods course (C++).

High School Institute José Martí, Havana, Cuba.

Part time teacher **2019**

Teaching Classical Mechanics to 10th grade.

PROFICIENCY

Languages : Spanish (native), English (oral,writing: fluent), German (A1), Japanese (begginer)
Programming Languages : Fortran, C++, Python, Java, XML, Arduino, Wolfram
Softwares/Tools : L^AT_EX, Origin, Wolfram Mathematica, Maple, Android Studio,
Hard Skills : Drawing, Video Editing, Digital Design, Web & App development
Soft Skills : Teamwork, Adaptability, Time management, Creativity, Decision-making, Analytical thinking, Attention to detail