

Carlos Pérez de los Heros

curriculum vitae

PERSONAL

Place/date of birth: A Coruña, Spain, 1964
Nationality: Spanish
Languages: active: Spanish, English, Swedish.
passive: French

CONTACT

Department of Physics and Astronomy
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ACADEMIC DEGREES

- Oct. 2002: Docent in High Energy Physics, Uppsala University, Sweden
Title of dissertation: *Going to extremes: The origin and detection of high-energy cosmic neutrinos*
- Jan. 1996: PhD in Physics, Weizmann Institute of Science, Israel.
Title of thesis: *Low-mass e^+e^- production in S-Au collisions at 200 GeV/n*
- Sept. 1987: MSc. in Physics, Universidad Autónoma de Madrid, Spain
- June 1985: BSc. in Physics. Universidad de Santiago de Compostela, Spain

SCIENTIFIC CAREER

- Present Professor in High Energy Physics, Uppsala University.
- 2006-2022: Associate Professor, Uppsala University .
- 2000-2006: Swedish Research Council Senior Researcher, Uppsala University.
- 1999: Research associate. Uppsala University.
- 1997-1998: Marie Curie Postdoctoral Fellow. Uppsala University.
Funded by the EU 4th Framework of Training and Mobility of Researches .
- 1992-1996: Doctoral fellow. Weizmann Institute of Science.
Funded by a grant of the Feinberg Graduate School of the Weizmann Institute.
- 1990-1991: Resident Astrophysicist. Astrophysics Institute of the Canary Islands (IAC).
- 1988-1989: Postgraduate fellowship at CIEMAT (Center for Technology, Environment and Energy Research), Madrid.

TEACHING

Long experience in teaching both at undergraduate and graduate level. Completed the 10-week academic teacher training program of Uppsala University.

Courses taught in the last 10 years: Mechanics I and II, Astroparticle Physics, Quantum Physics, Wave mechanics and Optics and Nuclear Physics I. Annual participation as invited lecturer in the MSc course "Astrophysical tests of physical theories".:

Invited lecturer at several summer/doctoral schools: "Taller de Altas Energías", Benasque, Spain. Sep. 14-27, 2014, International School on Astroparticle Physics (ISAPP) "Multi-messenger investigation of the visible and dark Universe". Belgirate, Italy, July, 21-30, 2014, ISAPP school "The dark side of the Universe", Heidelberg, Germany, July 8-15, 2011.

STUDENT SUPERVISION

- “Search for long-lived particles with IceCube”, PhD thesis. Main supervisor
- “High energy neutrino emission from Supernovae”, PhD thesis. Co-supervisor
- “Search for relativistic monopoles with IceCube”, PhD thesis. Main supervisor.
- “Limits on Kaluza-Klein dark matter annihilation in the Sun from recent IceCube results”. BSc project, 2019. Main supervisor.
- “Characterization of monopole-induced showers in the atmosphere”, BSc project. 2017. Main supervisor
- “PINGU sensisivity to dark matter”, MSc thesis. 2015. Main supervisor
- “Search for dark matter in the center of the Milky Way”, PhD thesis, 2015. Co-supervisor.
- “Dark matter searches with IceCube: constrains on the MSSM and the CPVMSSM”, BSc project. 2012. Main supervisor.
- “A search for dark matter in the Sun with AMANDA and IceCube”, PhD thesis. 2011. Co-supervisor.
- “Search for low-mass WIMPs with the AMANDA neutrino telescope”, PhD thesis, 2007. Co-supervisor.

PUBLICATIONS

- Author or co-author of 287 refereed publications in international journals (not including conference proceedings).
- 37670 citations (average of 131 citations per paper). Eleven papers with more than 500 citations. 93 papers with more than 100 citations.
- h-index of 107 (google scholar) / 100 (INSPIRE-HEP database).
- Invited oral contributions to 20 international conferences in the last 10 years.
- Editor or co-editor of two proceedings of international conferences.
- Editor of the book “Particle Physics with Neutrino Telescopes”, World Scientific.
- Author of a review chapter on Cosmic searches for Lorentz invariance violation for the book "Modified and Quantum Gravity - From Theory to Experimental Searches on All Scales", Springer Nature, 2023.
- Author of a review chapter on Dark Matter for the review book “Neutrino Astronomy” by World Scientific, 2017.
- Co-author of a review article on Particle Physics with IceCube for the European Physical Journal C.
- Author of the review article “Status, Challenges and Directions in Indirect Dark Matter Searches” for Symmetry.

ORGANIZATION OF CONFERENCES (PAST 10 YEARS)

- Fifth Annual Conference on "Quantum gravity phenomenology in the multi-messenger approach", Madrid (Spain), 2024. Member of the organizing committee.
- Co-convener of the Astroparticle and GW sessions. EPS-HEP 2023.
- Fourth Annual Conference on "Quantum gravity phenomenology in the multi-messenger approach", Rijeka (Croatia), 2023. Member of the organizing committee.
- RICAP2022, Rome. Co-convener of the dark matter sessions.
- Third Annual Conference on "Quantum gravity phenomenology in the multi-messenger approach", Naples (Italy), 2022. Member of the organizing committee.
- Dark Ghosts 2022, Granada, Spain. Memeber of the organizing committee.
- Second Annual Conference on "Quantum gravity phenomenology in the multi-messenger approach", Corfu (Greece), 2021. Member of the organizing committee.
- VLVnT20, Valencia 16-18 September. Member of the Intl. Advisory Committee
- First Annual Conference on "Quantum gravity phenomenology in the multi-messenger approach", Granada (Spain), 2020. Member of the organizing committee and speaker.
- PPNT2019 Workshop, Uppsala, 3-5 October. Organizer
- NUFACT2017, Uppsala, 2017. Member of the local organizing committee of
- TeV Particle Astrophysics conference, TeVPA 2016, CERN, 2016. Co-convener of the session “Indirect searches for dark matter”.

ORGANIZATION OF CONFERENCES (PAST 10 YEARS) Cont.

- TeV Particle Astrophysics conference, TeVPA 2014, Amsterdam, 2014. Co-convener of the session "Neutrino Physics".
- Co-organizer of the 1st GNN workshop on Indirect dark matter search with neutrino telescopes, Valencia, 2014.
- Chair of the organizing committee of the "Second Workshop on Exotic Physics with Neutrino Telescopes", Marseille, 2013.

SCIENTIFIC STAYS ABROAD

Invited as 'Key Participant' to the "Multi-Probe Identification of Dark Matter" program of the Kavli Institute, Santa Barbara, USA, April-June 2013.

Invited researcher at the Universite de Marseille, November-December 2011 (ranked first in the University list of proposed visitors).

Invited researcher at the Universite de Marseille, November-December 2009.

ORGANIZATION OF PROGRAMS

2004-2011: coordinator of the ERASMUS/SOCRATES and NORDPLUS exchange programs of the Department of Physics and Astronomy (NORDPLUS is an exchange program between the Nordic and Baltic countries).

MEMBERSHIP IN SCIENTIFIC SOCIETIES

Swedish Physical Society.

2024-present Chairman of the Particle and Astroparticle Physics section.

2008-2011 Member of the steering committee of the Particle and Astroparticle Physics section.

2010-2011 Chairman of the Particle and Astroparticle Physics section.

International Astronomical Union

OTHER RESPONSIBILITIES

2021-2023 Co-leader of the "Beyond the Standard Model" working group of the IceCube collaboration

2012-2023 Member of the publications committee of the IceCube collaboration

2008-2023 Member of the "Trigger and data filter" committee of the IceCube collaboration

2014-2016 Co-leader of the "Beyond the Standard Model" working group of the IceCube collaboration

2008-2013 Leader of the "Dark matter" working group of the IceCube collaboration

2008-2012 Member of the Swedish delegation to ECFA (European Committee for Future Accelerators)

2000-2004 Software coordinator of the AMANDA experiment (elected in 2002 for a second term)

2000-2004 Responsible for the organization of the weekly seminars of the Department of Physics and Astronomy

Member of the examination committee of 23 PhD thesis in the last 10 years, (7 of them abroad)

Referee of the JCAP journal

External referee of the Spanish National Scientific Evaluation Agency

Expert referee of the Estonian Research Council

GRANTS

Continuous funding from the Swedish Research Council with about 70.000 eur per year for the period 2004-2014 on grants as main applicant. Currently funded with a grant of 294.000 eur for the period 2022-2025 as main applicant.

Co-applicant of the general grant which supports the activities of the Uppsala group in IceCube, 108000 USD/year

PRESENTATIONS IN CONFERENCES AND SEMINARS (PAST 10 YEARS)

XIX Neutrino Telescopes Workshop, Venice, 2023.

Nordic Physics Days, 2021, Uppsala.

Wilhelm and Else Heraeus Seminar on "Experimental Tests and Signatures of Modified and Quantum Gravity", Physics-Center Bad Honnef, Germany, 2021. (invited)

1st Annual Conference on Quantum gravity phenomenology in the multi-messenger approach, Granada (invited)

EPS-HEP, Ghent, 2019 (plenary invited).

XVIII Neutrino Telescopes Workshop, Venice, 2019. (invited)

2nd GNN Workshop on Indirect Dark Matter Searches with Neutrino Telescopes (Dark Ghosts 2018). Brussels,

TeV Particle Astrophysics 2018, to be held in Berlin, Germany, (invited)

GEMMA (Dark Matter searches, mainly in connection with Gravitational Waves), Lecce, 2018, (invited)

Perspectives in Astroparticle Physics from High Energy Neutrinos, 2017 (invited).

Solvay-Francqui Workshop on "Neutrinos: from Reactors to the Cosmos", Brussels, 2015 (invited)

KUBEC Workshop on Dark Matter searches, Brussels, Belgium, 2014. (invited)

TeV Particle Astrophysics & Identification of Dark Matter, Amsterdam, 2014.

Workshop on Latest results from Dark Matter searches, Nordita, Stockholm. 2014. (invited)

Workshop on Astroparticle Physics in Antarctica, NBI, Copenhagen, 2014. (invited)

CPAN Meeting, Santiago de Compostela, November 26-28, 2013. (invited)

Plus **invited seminars** at: University of Granada , Chalmers , Niels Bohr Institute , Universite de Geneve, IFIC/Universidad de Valencia, Universidad Autonoma de Madrid, IFAE, Barcelona, Technion, Weizmann Institute of Science , Universite Libre de Bruxelles, Universidad Complutense de Madrid, Universidad de Santiago de Compostela.

OUTREACH (PAST 10 YEARS)

"Dark matter: a window to the dark universe", Science Fika program, November 2023.

"Extrem astrofysik: IceCube neutrino-teleskopet vid Sydpolen", Science Fika program, February 2023.

Organizer of the 13x13 Outreach Talk Series at Uppsala, Autumn 2022 and Autumn 2023.

"The weirdest telescope ever: the IceCube neutrino telescope at the South Pole", public talk at Uppsala University, May 2018.

Organizer of the "Dark Matter Day" in Uppsala, October 30, 2017.

"Astrofísica Extrema: El telescopio IceCube en el Polo Sur", public talk, Tiedra Planetarium, Spain. August 2016.

"IceCube: Astrofísica desde el Hielo" in the March 2013 issue of Investigación y Ciencia, the spanish language version of Scientific American. Reprinted on "El Universo Oscuro", a monographic issue on dark matter on the same journal. June 2016 and on "Neutrinos" a monographic issue on the same journal on 2020.

Interview in 'El Cultural', November 2013, the culture supplement of El Mundo (one of the leading Spanish newspapers).