Dr Hernán Asorey

Medical Physics Department
Comisión Nacional de Energía Atómica
and
Scientific Computing Unit
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)

Comisión Nacional de Energía Atómica
   DFM, Centro Atómico Bariloche
   ITeDA, Centro Atómico Constituyentes
Centro de Investigaciones Energéticas, Medioambientales y
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Current Positions

2016-2022	Researcher (CNEA TNG 312 - Principal B) at the Medical Physics Department, Gerencia de Física (GF), Comisión Nacional de Energía Atómica (CNEA).
2021-2022	Researcher at the Scientific Computing Unit, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)

Key Performance Indicators (KPIs)

Production	136 publications in peer-reviewed indexed journals; 88 participations and presentations in Schools, Congresses, Conferences, or Symposia; 26 technical reports from CNEA and technical notes from the Pierre Auger Observatory.
Scopus	h-index=47, 13,799 citations in 155 articles in peer-reviewed indexed journals, and 50 preprints.
Scholar	htot=58, h5=45 (since 2017), i10=126 (i10=103 since 2017), 327 articles indexed in Scholar and 23,521 (11,609 since 2017) in 155 peer-reviewed indexed journals. 88 contributions and presentations in symposia and congresses.
Management	Principal Investigator or Co-Investigator in 12 national and international R&D+i projects. Principal Investigator in an international collaboration (2013–2016). Head of the Medical Physics Department of CNEA (2017–2021). Project Manager in 3 international projects.
Awards	Two awards for teaching performance.
Patents and books	Author of a introductory physics textbook. A national and international patent for a neutron detector.
Education	Advisor to 2 postdoctoral researchers, 5 doctoral, 5 master's, and 7 undergraduate physics students.

Education

2012	Doctor in Physics (Ph.D.) *Institution*: Particles and Fields Group, Centro Atómico Bariloche (CNEA) – Instituto Balseiro, Universidad Nacional de Cuyo (UNC). *Thesis*: The Water Cherenkov Detectors of the Pierre Auger Observatory and their Application to the Study of Background Radiation. *Advisor*: Dr. Ingomar Allekotte. Master in Science, Physics
2005	*Orientation*: High Energy Physics. *Institution*: Particles and Fields Group, Centro Atómico Bariloche (CNEA) – Instituto Balseiro (UNC). *Thesis*: Event Reconstruction with the Surface Detectors of the

Pierre Auger Observatory. *Advisor*: Dr. Ingomar Allekotte

2004   Licenciado in Physics

Institution: Instituto Balseiro, Centro Atómico Bariloche (CNEA-UNC)

Research and Teaching Activities

Since obtaining my Master's degree in 2005, I have participated in the following projects:

Medical Physics Department, Bariloche Atomic Center (CNEA)

2016–
Present

Responsible investigator for CNEA and coordinator of the Simulations Group in the project 'NEutrones Rápidos para la Explotación de Instalaciones con Dispositivos Atómicos (NEREIDA)' (2023–present).

Responsible investigator for CNEA and project manager of 'PlomBOX, an open-source device for lead detection in water' (2019–2022).

Applications of astroparticle detection (I): development of simulations and detectors for spatial dose evaluation and reconstruction in clinical instances, high radiation exposure environments, and fast neutron production facilities.

Development of analysis techniques using artificial intelligence, curation, and anonymization in large volumes of data.

Head of the Medical Physics Department, under the Physics Management and the Non-Nuclear Research and Applications Management, Bariloche Atomic Center (CNEA). Elected by peer researchers who make up the department (2017–2021). The position includes responsibility for executing public funds as well as managing human capital. During my tenure, the department created in 2016 was consolidated, by managing the incorporation or change of workplace for several researchers and students at all levels, while managing and executing funds for the purchase of equipment and supplies for an approximate total of more than 1.5 MUSD and national and international grants for more than 3 MUSD in total.

ITeDA, Constituyentes Atomic Center (CNEA)

2018–
Present

Applications of astroparticle simulations: applications in muography, space weather, and design of new radiation detectors and shields.

Applications of astroparticle detection (II): muography of large artificial and natural structures of geophysical interest: volcanic risk assessment in Latin America, mining prospecting, and densitometry in dams and dykes.

Design, construction, and characterization of the directional muon flux measurement experiment for the ANDES underground laboratory. The constructed muon detector will be installed in an operating mine in the Province of San Juan, 330 m below sea level.

LAGO Project (Latin American Giant Observatory)

2007–
Present

See http://lagoproject.net

Member of the LAGO Thematic Service in the Horizon-2020 EOSC-Synergy Project for the development and implementation of high-performance computing (HPC) and cloud environments for simulations, data analysis, and integration of the FAIR (*Findable, Accessible, Interoperable and Reusable*) data paradigm.

Principal Investigator of the LAGO Project, period 2013–2016.

Design and implementation of the current organization of the LAGO Project.

Design and coordination of the space weather program of the LAGO Project.

Design, development, and implementation of the simulations and data analysis program for the detection of transient events (GRBs and Forbush events), background radiation, and atmospheric physics, using the ARTI package.

Design, development, and implementation of the ANNA data analysis package for the project.

Design, development, and implementation of the ACQUA data acquisition package for the LAGO Project detectors.

Research, development, and construction of water Cherenkov detectors at the Universidad Industrial de Santander and the Centro Atómico Bariloche. One of them has been installed and is currently operating on the Antarctic Peninsula.

Design and development of the 'Determination of the Muon Lifetime in Water' experiment for undergraduate and graduate students at universities where the LAGO Project operates.

ANDES Underground Laboratory

2011–2022   *See www.andeslab.org*

Estimation of the expected background radiation at the ANDES Underground Laboratory due to natural radioactivity and high-energy atmospheric muon flux.

Design of the laboratory.

Design and construction of a detector for the directional measurement of the expected muon flux at ANDES. It will be installed in a mine operating 330 m below the surface.

Design of muon vetoes for the neutrino physics and dark matter search experiments to be installed in ANDES.

Pierre Auger Observatory

2006–2022   *See www.auger.org*

Cosmo-Geophysics Working Group Leader at the Pierre Auger Observatory (2014–2018).

Data analysis of the surface detector (SD) array of the Observatory.

Extended Atmospheric Showers Physics.

Development of the event reconstruction chain for events recorded by the SD detector.

Development and applications of low-energy modes (scaler' mode and histogram'mode) for the study of transient astrophysical events (GRBs and Forbush events) and on the short- and long-term modulation of the galactic cosmic ray flux due to solar activity.

Simulations of the detector and cosmic rays for determining the response of the water Cherenkov detectors in low-energy modes.

Data analysis of the atmospheric monitoring system of the Observatory.

Cherenkov Telescope Array (CTA) (2010–2014)

See www.cta-observatory.org

Characterization of the proposed Argentine sites for the installation of the Observatory (San Antonio de los Cobres and Leoncito).

Research and development of an autonomous and remote station for the control and data acquisition of a meteorological station and a sky quality meter, installed in the town of San Antonio de los Cobres, Salta, Argentina.

Teaching (since 2009)

Associate Professor[1] in undergraduate courses: Modern Physics A' (2015 and 2017), Physics IA'(2009–2012 and 2016), Physics IB'2009–2012), Physics IIB (Waves) '015), and currently Physics III B (Thermodynamics) ('nce 2018) and Physics IV B (Introduction to Particle Physics, Astrophysics, and Cosmology) (s'ce 2016); in the Physics Teaching program, Andean Campus, National University of Río Negro (UNRN); graduate courses Astroparticle Physics (20'–2021) and Particle and Radiation Detection Techniques (201'-2021) of the Double Doctorate in Astrophysics, National University of San Martín (UNSAM).

Books, chapters and patents

2020
3. H. Asorey, C. Graziosi, A. López Dávalos, Física IA. De las galaxias a los quarks, Colección Lecturas de Cátedra, Editorial UNRN, 334 pg, Viedma, Argentina, ISBN 978-987-4960-29-0, 2020. Utilizado actualmente como libro de texto de los cursos de Física IA y Física IB de la Universidad Nacional de Río Negro (UNRN).

2020
2. H. Asorey, I. Sidelnik, J.J. Blostein, M. Gómez Berisso, J. Lipovetzky, M. Sofo Haro; M. Pérez; L.H. Arnaldi; F. Alcalde, PCT/IB2020/050869: "Usage of Water Cherenkov Detectors for the detection of Neutrons and Gamma Radiation"

2019
1. H. Asorey, I. Sidelnik, J.J. Blostein, M. Gómez Berisso, J. Lipovetzky, M. Sofo Haro; M. Pérez; L.H. Arnaldi; F. Alcalde, AR20190100279: "Detector de Neutrones y Radiación Gamma Mediante el Empleo de un Detector Cherenkov en Agua"

Human Resources Training Summary

Up to now, I am training or I have successfully trained a total of **19** students and fellows, **2** Post Doctoral researchers, **5** PhD students, **5** MSc students and **7** undergraduated students in Argentina, Venezuela and Colombia.

Publication summary

136 peer review journal publications.

89 participations and presentations at Schools & Conferences.

26 technical reports of Comisión Nacional de Energía Atómica and internal technical notes of the Pierre Auger Observatory.

See the complete list of publications, works and scitations in some of the following services:

Google Scholar : scholar.google.com.co/citations?user=Vj7_fGsAAAAJ

Scopus : www.scopus.com/authid/detail.url?authorId=35276880300

Inspire-HEP : inspirehep.net/author/profile/H.Asorey.1

Dr. Hernán Asorey, 24th April 2023

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[1]The teaching categories in Argentina are ordered as follows: Full Professor, Associate Professor, Assistant Professor, Senior Teaching Assistant, First and Second Assistant.