

Hernán Asorey

Medical Physics Department & Particle and Radiation Detection Laboratory

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Personal Information

Born in Quilmes, Buenos Aires, Argentina, on February 05th, 1974 (43 years old)
Argentinian.

Current Positions

Researcher at the Medical Physics Department and Laboratorio Detección de Partículas y Radiación (LabDPR), Gerencia de Física (GF), Gerencia de Área de Investigaciones y Aplicaciones No Nucleares (GAIYANN), Centro Atómico Bariloche (CAB), Comisión Nacional de Energía Atómica (CNEA).

Jefe de Trabajos Prácticos at Insituto Balseiro, Science Department, Universidad Nacional de Cuyo (UNCuyo).

Associated Professor at Sede Andina, Universidad Nacional de Río Negro (UNRN).

Selected for incorporation to CONICET in the CIC-2016 call.

Education

- 2012 DOCTOR IN PHYSICS (PH.D.)
Institution: Particles and Fields Group, Centro Atómico Bariloche - Instituto Balseiro, CNEA-UNC. *Thesis:* The Water Cherenkov Detectors of the Pierre Auger Observatory and their Application to the Study of Background Radiation. *Advisor:* Dr. Ingomar Allekotte.
- 2005 MASTER IN SCIENCE, PHYSICS
Orientation: High Energy Physics. *Institution:* Particles and Fields Group, Instituto Balseiro, Centro Atómico Bariloche (CNEA-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)

Previous positions

- 2014-2015 Temporal Professor at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia. Junior researcher at COLCIENCIAS. years2013-2014 Post-doctoral researcher at Grupo de Investigación en Relatividad y Gravitación and Grupo Halley de Astronomía y Ciencias Aeroespaciales, Physics School, Universidad Industrial de Santander,

2013-2014	Bucaramanga, Colombia. Assistant Professor at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia.
2009-2012	Senior Teaching Assistant (Jefe de Trabajos Prácticos) at Physics Department, Universidad Nacional de Río Negro (UNRN)
2010-2012	Teaching Assistant at Science Department, Instituto Balseiro, Universidad Nacional de Cuyo (UNC)
2006-2012	Ph.D. student, Instituto Balseiro (UNC).
2004-2005	Master in Science, Instituto Balseiro (UNC).
2002-2004	Physics undergraduate student, Instituto Balseiro (UNC).
1992-1996	Industrial Engineering (first four of five years). University of Buenos Aires.
1992-2001	AIM S.A., metal mechanical industry, R+D department in industrial projects, Buenos Aires, Argentina.

Honours, Awards, Fellowships & Grants

2015	“Astroparticle Detectors”, PICT 2015-2428 Grant (Agencia-MinCyT, Argentina), approved
2015	Argentina-Colombia Cooperation Project Level II (PCB-II), “Aplicación de Técnicas de Muonografía para el Estudio de Estructuras Volcánicas de Riesgo”, MinCyT-CONICET-COLCIENCIAS: running.
2015	Universidad Industrial de Santander “2013-2014 Best Professor of the Science Faculty Award” for outstanding teaching skills at School of Physics
2014	“Nuclear Interactions Detections in CCDs for Dark Matter Search”, PICT 2013-2128 Grant (Agencia-MinCyT, Argentina): running.
2014	“Teaching-Research Articulation Project” internal proposal for the Universidad Industrial de Santander 2014, with the proposal “Introduction to XXI Century Physics: the best way to learn physics is doing physics” (Director). Status: finished and approved.
2014	“GUANE ₃ ⁺ : Upgrade of the UIS GUANE Array of Water Cherenkov Astroparticle Detectors by the incorporation of plastic scintillators for Space Weather Studies” internal research proposal for the Universidad Industrial de Santander (co-director). Status: finished and approved.
2014	“MuTe: Muon telescope for Volcanic Muonography” proposal for the Colombian Council of Science COLCIENCIAS 660/2014 call (researcher). Status: running (started in 2015).
2014	“Study of the Factibility of Volcanic Muonography techniques” proposal for the Colombian Council of Science COLCIENCIAS 653/2014 call (researcher). Status: Selected.
2013	“Generate an Educative Experience under the Citizen Science paradigm as the base for a future MOOC” proposal for FRIDA Foundation 2014 call (researcher). Status: finished and approved.
2013	“The GUANE Array of Astroparticle Detectors for Space Weather Studies” (co-director) internal proposal for the Universidad Industrial de Santander 2013 (co-director). Status: finished and approved.
2011	Balseiro Foundation “Best Teacher Award” for outstanding teaching skills at Instituto Balseiro.
2008-2010	Fellowship awarded by the National Council of Scientific and Technical Investigations (CONICET) to obtain a Ph.D. degree.
2006-2007	Fellowship awarded by the Balseiro Foundation and the National Commission of Atomic Energy (FUNC-CNEA).
2005	Fellowship awarded by the National Commission of Atomic Energy (CNEA) to obtain a Master degree in Physics.
2002-2004	Fellowship awarded by the National Commission of Atomic Energy (CNEA) to obtain a Master to study “Licenciatura en Física” at Instituto Balseiro.

Research & Teaching Activities

Since I have earned my master degree in December 2005, I have been involved in the following projects:

MEDICAL PHYSICS DEPARTMENT, CAB,(2016-PRESENT)

Task leader of the Advanced Techniques in Radiotherapy and Dosimetry group.

Intensity modulated radiotherapy (IMRT) simulations based on the Geant4 based OpenGate implementation.

PIERRE AUGER OBSERVATORY (2006-PRESENT)

See www.auger.org

Task leader of the “Cosmo-Geophysics” task of the Pierre Auger Observatory

Data analysis of the Surface Detector

Extensive Atmospheric Shower Physics

Development of the reconstruction event chain of the Surface Detector

Development and applications of the low energy modes (scaler and histogram modes) of the surface detectors of the Pierre Auger Observatory, for the study of transient events (Gamma Ray Bursts and Forbush events), and short and long term modulation of the galactic cosmic rays flux due to solar activity

CORSIKA and detector simulations, oriented to determine the water-Cherenkov response working in the low energy modes

Data analysis of the weather monitoring system of the Pierre Auger Observatory

LATIN AMERICAN GIANT OBSERVATORY (LAGO) (2007-PRESENT)

See lagoproject.org

Principal Investigator, period 2013-2016

Design and execution of the project new organization

Design and coordination of the LAGO Space Weather program

Simulations and data analysis for the detection of transient events (GRB and Forbush events), background radiation and atmospheric physics.

Research, development and building of water-Cherenkov detectors for the LAGO project at Universidad Industrial de Santander and Centro Atómico Bariloche. One of them will be installed at the Antarctic Peninsula.

Design and coordination of the experiment “Measurement of Muon Lifetime in Water”, done by undergraduate students at Instituto Balseiro.

CHERENKOV TELESCOPE ARRAY (CTA) (2010-2014)

See www.cta-observatory.org

San Antonio de los Cobres site characterization

Research and development of the autonomous station for control and data acquisition of the weather station and sky quality meter installed in San Antonio de los Cobres, Argentina, one of the site candidates for the CTA observatory.

ANDES UNDERGROUND LABORATORY (2010-2013, 2015-2016)

See www.andeslab.org

Estimation and measurements of the expected backgrounds at the ANDES underground lab due to natural radioactivity and high energy atmospheric muons

TEACHING (2009-PRESENT)

See www.ib.edu.ar, www.uis.edu.co, and www.unrn.edu.ar

Associated Profesor, Modern Physics A and Physics II B, Profesorado de Física, Sede Andina, Universidad Nacional de Río Negro (UNRN)

Professor, Classical Mechanics (Graduate) and General Astronomy, School of Physics, UIS.

Professor, Introductory Physics course and Introductory Particle Physics course, UIS.

Design and lecture of the course “Astro-meteorology and Climate Change”, intended for High Schools teachers, UIS, March 2014.

Professor, Advanced Mathematical Methods for Physics course, UIS.

Senior teaching assistant, Physics I (introductory physics) course, UNRN.

Teaching assistant, Experimental Physics III and Introduction to nuclear and particle physics courses, Instituto Balseiro (UNC)

Member of the Academic Committee of the Master in Medical Physics program of the Instituto Balseiro, Universidad Nacional de Cuyo.

Human Resources Training

UNDERWAY

- 2016 Master in Sciences thesis co-advisor “Eficiencia de un detector Cherenkov en agua para la detección de neutrones”, Nicolás Guarín at the Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina.
- 2015 PhD thesis coadvisor “Variaciones del flujo de radiación cósmica en el suelo y escenarios geofísicos”, Mauricio Suárez Durán at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia.

COMPLETED

- 2015 Master in Physics thesis advisor “Aplicaciones en Meteorología Espacial de los Datos del Proyecto LAGO”, Yúnior Pérez at the Physics Department, Universidad de los Andes, Mérida, Venezuela, Qualification 20/20, Publication Mention.
- 2015 Master in Physics thesis advisor of “Búsqueda de Fuentes de Astropartículas en los Datos de la Colaboración LAGO”, Christian Sarmiento Cano at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia. Qualification 5/5, Meritorious Mention.
- 2015 Master in Physics thesis advisor of “Modulación de Rayos Cósmicos Galácticos a nivel del suelo por cambios en el Campo Geomagnético y aplicaciones a Meteorología Espacial en el Proyecto LAGO”, Mauricio Suárez Durán at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia. Qualification 5/5, Meritorious Mention.
- 2015 Physics thesis advisor of “Meteorología Espacial y la Navegación Aérea”, Sergio Pinilla at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia. Qualification 5/5, Award-winning thesis.

- 2015 Physics thesis advisor “Sensibilidad del Proyecto LAGO a Señales Gamma provenientes del Centro de la Galaxia”, Arturo Núñez at the Physics Department, Universidad de los Andes, Mérida, Venezuela, Qualification 20/20.
- 2015 Physics thesis advisor “Método de *Thinning* y *Dethinning* para Lluvias de Primarios de Alta Energía”, Alex Estupiñán at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia, Qualification 5/5, Award-winning thesis.
- 2015 Physics thesis advisor “Simulación de los detectores Cherenkov en agua de la colaboración LAGO”, Rolando Calderón Ardila at the School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia, Qualification 4.8/5.
- 2014 System Engineering thesis advisor “Visualización de Cascadas de Rayos Cósmicos sobre GPUs”, Rafael Laverde at the School of System Engineering, Universidad Industrial de Santander, Bucaramanga, Colombia, Qualification 4.8/5.
- 2014 Physics thesis advisor “Estudios de la Respuesta del Arreglo de Detectores de Superficie del Observatorio Pierre Auger de Rayos Cósmicos”, Lic. Jonathan David Bossio Solá, at the Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Buenos Aires (UBA), Qualification 10/10.

Thesis Referee

- 2017 Doctoral thesis in Physics proposal referee at the Universidad Industrial de Santander (UIS), Bucaramanga, Colombia, Anamaría Navarro.
- 2017 Doctoral thesis in Physics referee at the Universidad de Buenos Aires (UBA), Buenos Aires, Argentina, Federico Izraelevitch.
- 2017 Doctoral thesis in Physics referee at the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), Aliné Galindo Téllez.
- 2014 Undergraduate thesis in Physics referee at the Universidad Industrial de Santander, Bucaramanga, Colombia, Juan Felipe Zárate Chahin.
- 2014 Undergraduate thesis in Physics referee at the Universidad Industrial de Santander (Escuela de Física), Bucaramanga, Colombia, Harold Andrés Peña Herazo.
- 2012 Master in Physics thesis referee at the Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina, Lucas Micheletti.
- 2012 Master in Physics thesis referee at the Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina, Manuel Gonzalez.
- 2012 Undergraduate thesis in Physics referee at the Universidad Industrial de Santander (Escuela de Física), Bucaramanga, Colombia, Christian Sarmiento Cano.

Publications

SELECTED WORKS

This list is a personal selection of the published works I have been directly involved:

- 2017 51. I. Sidelnik & H. Asorey, *LAGO: the Latin American Giant Observatory*, NIM-A in press 2017 [arXiv:1703.05337](https://arxiv.org/abs/1703.05337)[astro-ph.IM]
- 2017 50. I. Sidelnik, H. Asorey, J. J. Blostein & M. Gómez Berisso, *Neutron Detection Using a Water Cherenkov Detector with Pure Water and a Single PMT*, NIM-A in press 2017
- 2017 49. The Pierre Auger Collaboration, *Muon counting using silicon photomultipliers in the AMIGA detector of the Pierre Auger observatory* JINST **12** P03002 (2017) [arXiv:1703.06193](https://arxiv.org/abs/1703.06193)[astro-ph.IM]

- 2017 48. The Pierre Auger Collaboration, *Impact of atmospheric effects on the energy reconstruction of air showers observed by the surface detectors of the Pierre Auger Observatory* JINST **12** P02006 (2017) [arXiv:1702.02835](#)[astro-ph.IM]
- 2016 47. The Pierre Auger Collaboration, *The Pierre Auger Observatory Upgrade-Preliminary Design Report*, [arXiv:1604.03637](#)[astro-ph.IM]
- 2015 46. H. Asorey for the LAGO Collaboration, *LAGO: the Latin American Giant Observatory*, in Proc. 34th International Cosmic Ray Conference, PoS(ICRC2015)247, The Hague, The Netherlands, 2015
- 2016 45. H. Asorey, R. Mayo-García, L.A. Núñez, M. Rodríguez-Pascual, A. J. Rubio-Montero, M. Suarez Durán, & L.A. Torres-Niño for the LAGO Collaboration, *The Latin American Giant Observatory: a successful collaboration in Latin America based on Cosmic Rays and computer science domains*, in Proc. 2016 16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), IEEE Proceedings, pp 707-711, Cartagena, Colombia, 2016, [arXiv:1605.09295](#)[astro-ph.IM]
- 2015 44. I. Sidelnik, H. Asorey, J. J. Blostein, M. Gómez Berisso, H. Arnaldi, M. Sofo Haro, *Detección de Neutrones mediante efecto Cherenkov en Agua*, Actas de la Reunión Anual de la Asociación Argentina de Tecnología Nuclear (2015).
- 2015 43. H. Asorey & L. A. Núñez, *Astroparticle Physics at Eastern Colombia*, in Proc. César Lattes Meeting, accepted Niterói, Brazil, 2015 [arXiv:1510.01305](#)[astro-ph.IM]
- 2015 42. H. Asorey for the LAGO Collaboration, *LAGO: the Latin American Giant Observatory*, in Proc. 34th International Cosmic Ray Conference, PoS(ICRC2015)247, The Hague, The Netherlands, 2015
- 2015 41. S. Dasso, A.M. Gulisano, J.J. Masías-Meza & H. Asorey for the LAGO Collaboration, *A Project to Install Water-Cherenkov Detectors in the Antarctic Peninsula as part of the LAGO Detection Network*, in Proc. 34th International Cosmic Ray Conference, PoS(ICRC2015)105, The Hague, The Netherlands, 2015
- 2015 40. H. Asorey, S. Dasso, L.A. Núñez, Y. Perez, C. Sarmiento & M. Suárez-Durán for the LAGO Collaboration, *The LAGO Space Weather Program: Directional Geomagnetic Effects, Background Fluence Calculations and Multi-Spectral Data Analysis*, in Proc. 34th International Cosmic Ray Conference, PoS(ICRC2015)142, The Hague, The Netherlands, 2015
- 2015 39. H. Asorey, P. Miranda, A. Núñez-Castiñeyra, L.A. Núñez, J. Salinas, C. Sarmiento-Cano, R. Ticona & A. Velarde for the LAGO Collaboration, *Analysis of Background Cosmic Ray Rate in the 2010-2012 Period from the LAGO-Chacaltaya Detectors*, in Proc. 34th International Cosmic Ray Conference, PoS(ICRC2015)414, The Hague, The Netherlands, 2015
- 2015 38. H. Asorey, D. Cazar-Ramírez, R. Mayo-García, L.A. Núñez, M. Rodríguez-Pascual & L.A. Torres-Niño for the LAGO Collaboration, *Data Accessibility, Reproducibility and Trustworthiness with LAGO Data Repositories*, in Proc. 34th International Cosmic Ray Conference, PoS(ICRC2015)672, The Hague, The Netherlands, 2015
- 2014 37. H. Asorey for the LAGO Collaboration, *The Latin American Giant Observatory*, in Proc. X SILAF AE, Nuc. Phys. B Proc. Supp., submitted, Medellín, Colombia, 2014

- 2014 36. S. Pinilla, H. Asorey, L.A. Núñez, *Cosmic Rays Induced Background Radiation on Board of Commercial Flights*, in Proc. X SILAF AE, Nuc. Phys. B Proc. Supp., accepted, Medellín, Colombia, 2014
- 2014 35. H. Asorey for the LAGO Collaboration, *The Latin American Giant Observatory*, in Proc. X SILAF AE, Nuc. Phys. B Proc. Supp., accepted, Medellín, Colombia, 2014
- 2014 34. S. Pinilla, H. Asorey, L.A. Núñez, *Cosmic Rays Induced Background Radiation on Board of Commercial Flights*, in Proc. X SILAF AE, Nuc. Part. Phys. Proc. **267-269** 418-420 (2015), Medellín, Colombia, 2014
- 2014 33. R. Calderón, H. Asorey, L.A. Núñez for the LAGO Collaboration, *Geant4 based simulation of the Water Cherenkov Detectors of the LAGO Project*, in Proc. X SILAF AE, Nuc. Part. Phys. Proc. **267-269** 424-426 (2015), Medellín, Colombia, 2014
- 2014 32. The Pierre Auger Collaboration, [earches for Large-scale Anisotropy in the Arrival Directions of Cosmic Rays Detected above Energy of 1019 eV at the Pierre Auger Observatory and the Telescope Array](#) ApJ **794**(2), 172 (2014)
- 2014 31. H. Asorey for the LAGO Collaboration, *The Latin American Giant Observatory (LAGO) project*, in Proc. X COLAGE, Adv. Space Res. submitted, Cusco, Perú, 2014
- 2014 30. M. Suárez, H. Asorey & Núñez for the LAGO Collaboration, *The rigidity cutoff calculation method for the Sites of the LAGO Project*, in Proc. X COLAGE, Adv. Space Res. submitted, Cusco, Perú, 2014
- 2014 29. C. Sarmiento, H. Asorey & L. Núñez for the LAGO Collaboration, *The GUANE Array of the LAGO Project: Studying Space Weather Phenomena from Ground Level*, in Proc. X COLAGE, Adv. Space Res. submitted, Cusco, Perú, 2014
- 2014 28. H. Asorey & S. Dasso for the LAGO Collaboration, *The LAGO Project Space Weather Program*, in Proc. 40th COSPAR Scientific Assembly, Adv. Space Res. submitted, Moscú, Rusia, 2014
- 2014 27. H. Asorey, J.I. Castro & A. López Dávalos, [Una deducción analítica simple de la hodógrafa para el problema de Kepler](#), Rev. Ens. Fís. **26**(1), 63-73 (2014).
- 2013 26. H. Asorey & L. Núñez, *Astronomy and Astrophysics in the Colombian Andes: the PAS Project* in Proc. XIV Latin American Regional IAU Meeting LARIM2014, Rev. Mex. AA Conf. Series, in press, Florianopolis, Brazil, 2013
- 2013 25. H. Asorey for the LAGO Collaboration, *The LAGO Solar Project*, in Proc. 33 International Cosmic Ray Conference, in press, Rio de Janeiro, Brazil, 2013
- 2013 24. H. Asorey, D. Melo *et al.*, *Characterization of San Antonio de los Cobres for a Cherenkov telescope array in energy range from 20 GeV to 130 GeV*, in Proc. 33 International Cosmic Ray Conference, in press, Rio de Janeiro, Brazil, 2013
- 2012 23. S. Dasso & H. Asorey, for the Pierre Auger Collaboration, [The scaler mode in the Pierre Auger Observatory to study heliospheric modulation of cosmic rays](#), Adv. Space Res. **49** (11), 1563-1569 (2012)
- 2012 22. H. Asorey, M. Arribere, X. Bertou, M. Gómez Berisso, F. Sánchez, *Expected Backgrounds at the ANDES Underground Laboratory* plenary talk given at the Third International Workshop for the Design of the ANDES Underground Laboratory, Valparaíso, Chile, 11-12 Jan 2012.

- 2011 21. The Pierre Auger Collaboration, [The Pierre Auger Observatory Scaler Mode for the Study of the Modulation of Galactic Cosmic Rays due to Solar Activity](#), JINST 6 P01003– P01020 (2011). *Coordinator
- 2011 20. The Pierre Auger Collaboration, [The Lateral Trigger Probability function for UHE Cosmic Rays Showers detected by the Pierre Auger Observatory](#), Astropart. Phys. 35 (5), 266–276 (2011)
- 2011 19. H. Asorey & A. López Dávalos, *Fermi Problem: Power developed at the eruption of the Puyehue-Cordón Caulle volcanic system in June 2011*, [arXiv:1109.1165v1](#)[physics.ed-ph]. Selected as the best [arXiv](#) paper of September 2011 by the [M.I.T. Technology Review Physics arXiv Blog](#), (2011)
- 2011 18. H. Asorey, A. López Dávalos & A. Clúa, *Potencia de la Erupción del Volcán Puyehue como un Problema de Fermi*, Rev. Ens. Fís. 24(2), 49-54 (2011)
- 2011 17. I. Allekotte, H. Arnaldi, H. Asorey, X. Bertou, M. Gómez Berisso, & M. Sofo Haro, *Development of ultra-fast and ultra low power consumption electronics in the Bariloche Particle and Radiation Detection Laboratory*, poster presentation in the 96th National Reunion SUF-AFA2011 of the Argentinian Physics Association, Montevideo, Uruguay, 20–23 Sept 2011.
- 2011 16. H. Asorey[Pierre Auger Collaboration], *Low energy radiation measurements with the water Cherenkov detector array of the Pierre Auger Observatory*, in Proc. 32 International Cosmic Ray Conference, vol. 11 462–465, Beijing, China, 11–18 Ago 2011
- 2011 15. The Pierre Auger Collaboration, [Search for First Harmonic Modulation in the Right Ascension Distribution of Cosmic Rays Detected at the Pierre Auger Observatory](#), Astropart. Phys. 34 627–639 (2011)
- 2010 14. J. Blümer & The Pierre Auger Collaboration, [The Northern Site of the Pierre Auger Observatory](#), Journal of Physics 12 (3) 035001
- 2010 13. The Pierre Auger Collaboration, [Measurement of the energy spectrum of cosmic rays above \$10^{18}\$ eV using the Pierre Auger Observatory](#), Phys. Lett. B685 239–246 (2010), [arXiv:1002.1975v1](#)[astro-ph.HE]
- 2010 12. The Pierre Auger Collaboration, [Trigger and Aperture of the Surface Detector Array of the Pierre Auger Observatory](#), NIM A613 29–39, (2010)
- 2010 11. H. Asorey[LAGO Collaboration], *The Large Aperture Gamma Ray Burst Observatory (LAGO)*, plenary talk in the 3rd International Workshop of High Energy Physics in the LHC Era HEP2010, Valparaíso, Chile, 4–8 Jan 2010.
- 2009 10. H. Asorey[Pierre Auger Collaboration], *Cosmic Ray Solar Modulation Studies at the Pierre Auger Observatory*, in Proc. 31th International Cosmic Ray Conference, Lodz, Poland, 8–15 Jul 2009.
- 2009 9. The Pierre Auger Collaboration, [Atmospheric effects on extensive air showers observed with the Surface Detector of the Pierre Auger Observatory](#), Astropart. Phys. 32, 89–99, (2009), [arXiv:0906.5497v2](#)[astro-ph.IM]
- 2008 8. The Pierre Auger Collaboration, [Observation of the Suppression of the Flux of Cosmic Rays above \$4 \times 10^{19}\$ eV](#), PRL 101 061101 (2008)

- 2008 7. The Pierre Auger Collaboration, [Upper limit on the cosmic-ray photon flux above \$10^{19}\$ eV using the surface detector of the Pierre Auger Observatory.](#), Astropart. Phys. **29** 243–256 (2008)
- 2008 6. The Pierre Auger Collaboration, [Correlation of the highest-energy cosmic rays with the positions of nearby active galactic nuclei.](#), Astropart. Phys. **29** 188–204 (2008)
- 2007 5. The Pierre Auger Collaboration, [Correlation of the highest energy cosmic rays with nearby extragalactic objects.](#), Science **318** 939–943 (2007)
- 2008 4. D. Allard et al. [LAGO Collaboration], [Use of water-Cherenkov detectors to detect Gamma Ray Bursts at the Large Aperture GRB Observatory \(LAGO\)](#), NIM **A595** 70–72 (2008)
- 2007 3. D. Allard et al. [LAGO Collaboration], [Looking for the high energy component of GRBs at the Large Aperture GRB Observatory](#), in Proc. 30th International Cosmic Ray Conference, Mérida, Mexico, 3–11 Jul 2007.
- 2007 2. The Pierre Auger Collaboration, [Anisotropy studies around the galactic centre at EeV energies with the Auger Observatory.](#), Astropart. Phys. **27** 244–253 (2007)
- 2006 1. D. Allard et al. [LAGO Collaboration], [The Large Aperture GRB aperture](#), in Proc. of the Observational Astronomy in Argentina Workshop, Buenos Aires.

COMPLETE LIST OF JOURNAL PAPERS

- 2017 83. The Pierre Auger Collaboration, [Muon counting using silicon photomultipliers in the AMIGA detector of the Pierre Auger observatory](#) JINST **12** P03002 (2017) [arXiv:1703.06193](#)[astro-ph.IM]
- 2017 82. The Pierre Auger Collaboration, [Impact of atmospheric effects on the energy reconstruction of air showers observed by the surface detectors of the Pierre Auger Observatory](#) JINST **12** P02006 (2017) [arXiv:1702.02835](#)[astro-ph.IM]
- 2017 81. I. Sidelnik & H. Asorey, [LAGO: the Latin American Giant Observatory](#), NIM-A in press 2017 [arXiv:1703.05337](#)[astro-ph.IM]
- 2017 80. I. Sidelnik, H. Asorey, J. J. Blostein & M. Gómez Berisso, [Neutron Detection Using a Water Cherenkov Detector with Pure Water and a Single PMT](#), NIM-A in press 2017
- 2017 79. The Pierre Auger Collaboration, [Ultrahigh-energy neutrino follow-up of gravitational wave events GW150914 and GW151226 with the Pierre Auger Observatory](#) Phys. Rev. **D94** 122007 (2016) [arXiv:1608.07378](#)[astro-ph.HE]
- 2017 78. The Pierre Auger Collaboration, [Combined fit of spectrum and composition data as measured by the Pierre Auger Observatory](#), JCAP **04** 038 (2017) [arXiv:1612.07155](#)[astro-ph.HE]
- 2017 77. The Pierre Auger Collaboration, [A targeted search for point sources of EeV photons with the Pierre Auger Observatory](#) ApJ Lett. **837** L25 (2016) [arXiv:1612.04155](#)[astro-ph.HE]
- 2016 76. The Pierre Auger Collaboration, [Search for photons with energies above \$10^{18}\$ eV using the hybrid detector of the Pierre Auger Observatory](#) JCAP, accepted (2016) [arXiv:1612.01517](#)[astro-ph.HE]
- 2016 75. The Pierre Auger Collaboration, [Multi-resolution anisotropy studies of ultrahigh-energy cosmic rays detected at the Pierre Auger Observatory](#) [arXiv:1611.06812](#)[astro-ph.HE]

- 2016 74. The Pierre Auger Collaboration, *Evidence for a mixed mass composition at the ‘ankle’ in the cosmic-ray spectrum* Phys. Lett. B **762** 288–295 (2016) [arXiv:1609.08567](#)[astro-ph.HE]
- 2016 73. The Pierre Auger Collaboration, *Testing Hadronic Interactions at Ultrahigh Energies with Air Showers Measured by the Pierre Auger Observatory* Phys. Rev. Lett. **117** 192001 (2016) [arXiv:1610.08509](#)[hep-ex]
- 2016 72. The Pierre Auger Collaboration, *Search for ultrarelativistic magnetic monopoles with the Pierre Auger observatory* Phys. Rev. D **94** 082002 (2016) [arXiv:1609.04451](#)[astro-ph.HE]
- 2016 71. The Pierre Auger Collaboration, *Energy estimation of cosmic rays with the Engineering Radio Array of the Pierre Auger Observatory* Phys. Rev. D **93** 122005 (2016) [arXiv:1508.04267](#)[astro-ph.HE]
- 2016 70. The Pierre Auger Collaboration, *The Pierre Auger Observatory Upgrade-Preliminary Design Report*, [arXiv:1604.03637](#)[astro-ph.IM]
- 2016 69. The Pierre Auger Collaboration, *Azimuthal asymmetry in the risetime of the surface detector signals of the Pierre Auger Observatory* Phys. Rev. D **93**, 072006 (2016) [arXiv:1604.00978](#)[astro-ph.HE]
- 2016 68. The Pierre Auger Collaboration, *Prototype muon detectors for the AMIGA component of the Pierre Auger Observatory* JINST **11** P02012 (2016) [arXiv:1605.01625](#)[physics.ins-det]
- 2016 67. The Pierre Auger Collaboration, *Nanosecond-level time synchronization of autonomous radio detector stations for extensive air showers* JINST **11** P01018 (2016) [arXiv:1512.02216](#)[physics.ins-det]
- 2016 66. The Pierre Auger Collaboration, *Measurement of the Radiation Energy in the Radio Signal of Extensive Air Showers as a Universal Estimator of Cosmic-Ray Energy* Phys. Rev. Lett. **116**, 241101 (2016) [arXiv:1605.02564](#)[astro-ph.HE]
- 2016 65. The Pierre Auger Collaboration, *Energy Estimation of Cosmic Rays with the Engineering Radio Array of the Pierre Auger Observatory* Phys. Rev. D **93**, 122005 (2016) [arXiv:1508.04267](#)[astro-ph.HE]
- 2016 64. The Pierre Auger Collaboration, *Search for correlations between the arrival directions of IceCube neutrino events and ultrahigh-energy cosmic rays detected by the Pierre Auger Observatory and the Telescope Array* JCAP **01** 037 (2016) [arXiv:1511.09408](#)[astro-ph.HE]
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PARTICIPATION & PRESENTATIONS AT SCHOOLS & CONFERENCES

- 2017 55. H. Asorey, *Instructor invitado para la Primera Escuela Chilena de de Rayos C3smicos - IV Escuela “Astropart3culas en LAGO”*, con el curso “F3sica de Astropart3culas: f3sica, simulaciones y an3lisis de datos”, Universidad de Valparaiso y Unisersidad de La Serena, Valparaiso y La Serena, Chile (2017).
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- 2013 33. H. Asorey & L. Núñez, *Astronomy and Astrophysics in the Colombian Andes: the PAS Project* in Proc. XIV Latin American Regional IAU Meeting LARIM2014, Florianopolis, Brazil, Rev. Mex. AA SC44 107 (2014)
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- 2012 24. H. Asorey [Pierre Auger Collaboration], *Heliospheric Modulation of Cosmic Rays Observed by the Pierre Auger Observatory and the LAGO Project*, parallel talk given at the 4th International Workshop of High Energy Physics in the LHC Era HEP2012, Valparaiso, Chile, 4–10 Jan 2012.
- 2011 23. H. Asorey, *Fermi Problem: Power developed at the eruption of the Puyehue-Cordón Caulle volcanic system in June 2011*, talk given in the Physics Education Division during the 96th National Meeting SUF-AFA2011 of the Argentinian Physics Association, Montevideo, Uruguay, 20–23 Sept 2011.
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- 2009 13. The LAGO Collaboration, *Operating Water Cherenkov Detectors in high altitude sites for the Large Aperture GRB Observatory*, in Proc. 31th International Cosmic Ray Conference, Lodz, Poland, 8–15 Jul 2009.
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- 2009 10. H. Asorey[Pierre Auger Collaboration], *The Acceptance of the Pierre Auger Observatory*, poster presentation in the VII Latinamerican Symposium of High Energy Physics SILFAE 2009, San Carlos de Bariloche, Argentina, 14–21 Jan 2009.
- 2008 9. XVI Course of the ISCRA (International School of Cosmic Ray Astrophysics) 2008: “Gamma Ray and Cosmic Ray Astrophysics: From below GeV to beyond EeV Energies”, Erice, Italia, Julio 2008
- 2008 8. Invited talk “Towards Cosmic ray Solar Modulation Studies”, University of Siegen, Siegen, Germany, 2008.
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- 2006 5. H. Asorey[Pierre Auger Collaboration], *The Surface Detector Array of the Pierre Auger Observatory*, parallel talk in the 1st International Workshop of High Energy Physics in the LHC Era HEP2006, Valparaiso, Chile, 12–17 Dec 2006.
- 2006 4. D. Allard et al. [LAGO Collaboration], *The Large Aperture GRB aperture*, in Proc. of the Observational Astronomy in Argentina Workshop, Buenos Aires.
- 2005 3. Third CERN-CLAF Latin American School Of High Energy Physics, CERN, Malargüe, Argentina. Poster: “Event Reconstruction using the Surface Detectors At UHECR Pierre Auger Observatory”
- 2004 2. Sixth J. J. Giambiagi Winter School on Particle Physics, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires. July 2004.
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Internal notes of the Pierre Auger Observatory (GAP Notes)

See www.auger.org/admin/GAP_Notes.

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- 2017 20. H. Asorey, *Air density calculation for the new weather data sets of the Auger Observatory*, GAP 2017-008
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- 2016 18. H. Asorey, E. Roulet, *The new weather data sets for the Auger Observatory Site*, GAP 2016-049
- 2015 17. H. Asorey, J. J. Blostein, M. Gómez Berisso, I. Sidelnik, *Performance of a Water Cherenkov Detector by using different Neutron Sources*, GAP 2015-030.
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Organising & other Academic Activities

- 2017 Member of the Academic Committee of the Master in Medical Physics program of the Instituto Balseiro, Universidad Nacional de Cuyo.
- 2016 Member of the local organising committee of the “Escuela Jose Antonio Balseiro 2016: Nuevas Tendencias de Investigación en Física Médica”, Instituto Balseiro, Centro Atómico Bariloche, Bariloche, Argentina, 03-28 Oct. 2016.
- 2011 Member of the local organising committee of the “First International Workshop for the Design of the ANDES Underground Laboratory”, Centro Atómico Constituyentes, Buenos Aires, Argentina, 11-14 April 2011.
- 2010 Member of the local organising committee of the “XI ICFA School on Instrumentation in Elementary Particle Physics”, San Carlos de Bariloche, Argentina, Jan 2010.
- 2010 Member of the local organising committee of the “95^a Reunión Nacional de Física de la Asociación Argentina de Física”, Malargüe, Argentina, Sept-Oct 2010.
- 2009 Member of the local organising committee of the “VII Simposio Latinoamericana de Física de Altas Energías SILAFEA 2009”, San Carlos de Bariloche, Argentina, Jan 2009.
- 2005 Member of the Instituto Balseiro Academic Council, elected by the Physics students.

Outreach & Complementary Activities

- 2015 H. Asorey, [Energía, Humanidad y Cambio Climático](#), “XIII Semana Nacional de la Ciencia y la Tecnología”, Sede Andina, Universidad Nacional de Río Negro, Bariloche, Argentina.
- 2015 H. Asorey & A. Cutsaimanis, “¿Qué onda con las ondas?”, Training course for Secondary School Teachers Instituto Nacional de Formación Docente (INFOD), Ministerio de Educación, Viedma, Río Negro. Role: professor and trainer.
- 2009-2015 H. Asorey, [Física ReConocida](#) Physics blog in spanish and facebook group.
- 2013-2014 H. Asorey & L. Núñez, [Física para todos](#), Introductory physics blog, School of Physics, Universidad Industrial de Santander.
- 2014 H. Asorey, [Energía, Humanidad y Cambio Climático](#), “Café Científico”, La Casa del Libro Total, Bucaramanga, Colombia
- 2011 H. Asorey & A. López Dávalos, *Fermi Problem: Power developed at the eruption of the Puyehue-Cordón Caulle volcanic system in June 2011*, [arXiv:1109.1165v1](#)[physics.ed-ph]. Selected as the best [arXiv](#) paper of September 2011 by the [M.I.T. Technology Review Physics arXiv Blog](#), (2011)
- 2011 H. Asorey, A. Clúa, A. López Dávalos [Cien millones de toneladas en un sólo día](#), Clarín (national circulation newspaper), 2011. Reproduced in hundreds of Argentinian and international newspapers and media.
- 2011 H. Asorey, *Viviendo con una estrella*, Solar physics and space weather phenomena talk, oriented to general public and high-school students of the Rio Negro Province. Start: March-2011
- 2010 *Distinguen trabajo de Investigadores del Centro Atómico Bariloche* (H. Asorey, X. Bertou, M. Gómez Berisso), El Cordillerano, Bariloche 2000 y ANBariloche.
- 2010

- 2009 Laura García, *Red Latinoamericana de Detectores para Estudiar Radiación Gamma* (H. Asorey, X. Bertou, M. Gómez Berisso), El Cordillerano, Bariloche 2000 y ANBariloche, 2010.
- 2008 H. Asorey, *Astrophysics for everyone*, bimonthly column in the “Nature and technology” local magazine.
- 2008 H. Asorey, *The Pierre Auger Observatory: a look to the Universe to the highest energies*, invited general public talk, National University of Quilmes, Argentina, April 2008.

Additional Information

Languages: Spanish (Native); English (B2); French (A1)

Computing skills: Linux and Windows operative system. Preferred editor: Vim.

Programming skills: C/C++, Perl, Python, HTML, PHP, SQL, and Bash.

Technical computing and data analysis software skills: root, gnuplot, spyder, Mathematica, AutoCAD design software.

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