

# Hernán Asorey

Departamento de Física Médica – Gerencia de Física



ITeDA – Gerencia de Tecnologías e Investigación en Altas Energías

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Nacido en Quilmes, Buenos Aires, Argentina, el 5 de Febrero de 1974 (48 años de edad)

## Posiciones actuales

- 2021-presente Investigador Principal B (CNEA TNG 312) en el Departamento Física Médica (DFM) y en el Instituto de Tecnologías en Detección y Astropartículas (ITeDA), Gerencia de Área de Investigaciones y Aplicaciones No Nucleares (GAIYANN), Comisión Nacional de Energía Atómica (CNEA).
- 2018-presente Profesor Asociado con dedicación simple de los cursos de Física III B (Termodinámica) y Física IV B (Introducción a Física de Partículas, Astrofísica y Cosmología) del Profesorado de Nivel Medio y Superior en Física de la Universidad Nacional de Río Negro (UNRN).

## Educación

- 2012 DOCTOR EN FÍSICA  
*Institución:* Grupo de Partículas y Campos, Instituto Balseiro, Centro Atómico Bariloche (CNEA-UNC). *Tesis:* Los Detectores Cherenkov del Observatorio Pierre Auger y su Aplicación al Estudio de Fondos de Radiación. *Director:* Dr. Ingomar Allekotte
- 2005 MAGISTER EN CIENCIAS FÍSICAS  
*Orientación:* Física de Partículas y Campos. *Institución:* Grupo de Partículas y Campos, Instituto Balseiro, Centro Atómico Bariloche (CNEA-UNC). *Tesis:* Reconstrucción de eventos con el Detector de Superficie del Observatorio Auger. *Director:* Dr. Ingomar Allekotte
- 2004 LICENCIADO EN FÍSICA  
*Institución:* Instituto Balseiro, Centro Atómico Bariloche (CNEA-UNC)

## Premios, Reconocimientos, Becas y Subsidios

- 2015 Premio “Mejor Profesor Cátedra de la Facultad de Ciencias 2013-2014” de la Universidad Industrial de Santander.
- 2011 Premio “Mejor Profesor del Instituto Balseiro 2011” otorgado por la Fundación Balseiro.
- 2022 Proyecto de Investigación “Detectores de astropartículas y sus aplicaciones: muongrafía de grandes estructuras y meteorología espacial”, PICT2021-GRF-TII-00301, Estado: en evaluación.
- 2022 Proyecto de Investigación “Astroparticle simulations and its applications”, European Grid Infrastructure - Advanced Computing for EOSC (EGI-ACE) Use Case, Estado: en evaluación.
- 2021 Proyecto de Investigación “Detectores modulares para imágenes con Muones de fondo”, Fundación Hermanos Agustín y Enrique Rocca, Estado: en ejecución.
- 2021 Proyecto de Investigación “Utilización y desarrollo de ligandos específicos del microambiente tumoral acoplados a  $^{177}\text{Lu}$  para la detección y tratamiento de tumores primarios y metástasis”, Fundación Balseiro & CNEA s/resol 306/21, Estado: en ejecución.
- 2020 Proyecto de Investigación “EOSC synergy – Building capacity, developing capability”, Horizon 2020

	RI project 857647, Thematic Service Leadership, Estado: en ejecución.
2020	Proyecto de Investigación “Desarrollo de Técnicas de Muongrafía para Estudios Densitométricos de Objetos de Importancia Estratégica, II” ASUTNBA0018565, Estado: en ejecución.
2020	Proyecto de Investigación “PlomBOX: un dispositivo de metrología de código abierto para combatir la contaminación por plomo en el agua potable mediante sensores biosintéticos” GCRF Award R11178, Estado: en ejecución.
2019	Proyecto de Investigación “Desarrollo de Técnicas de Muongrafía para Estudios Densitométricos de Objetos de Importancia Estratégica” ASUTNBA0005202, Estado: en ejecución
2019	Proyecto de Investigación “Muongrafía de grandes estructuras” SIIP2019-Co35, Estado: en ejecución.
2018	Proyecto de Investigación “Desarrollo de detectores de radiación” PICT 2018-2886 (Argentina Innovadora 2020) Agencia, Estado: en ejecución.
2017	Proyecto de Investigación “Desarrollo de detectores de neutrones basados en efecto Cherenkov en agua”, SECYT 06/C4863 (UNCuyo, Argentina), Estado: aprobado.
2016	Proyecto de Investigación “Detectores de Astropartículas”, PICT 2015-2428 (Agencia-MinCyT, Argentina), Estado: aprobado.
2010-presente	Docente categoría III (convocatoria 2015, previamente categoría V, convocatoria 2010) en el programa de incentivos a Docentes Investigadores SPU/ME.

## Actividades de Investigación & Docencia

Desde que obtuve mi Maestría en 2005, me he involucrado en los siguientes proyectos:

DEPARTAMENTO FÍSICA MÉDICA, CAB,(2016-PRESENTE)

Gerenciador del proyecto PlomBOX, un dispositivo de código abierto para la detección de plomo en agua

Aplicaciones de la detección de astropartículas (I): desarrollos de simulaciones y detectores para evaluación y reconstrucción espacial de dosis en instancias clínicas y en ambientes de alta exposición a la radiación.

Desarrollo de técnicas de análisis mediante inteligencia artificial, curaduría y anonimización en grandes volúmenes de datos.

Jefe del Departamento Física Médica, dependiente de la Gerencia de Física, Gerencia de Investigación y Aplicaciones No Nucleares, Centro Atómico Bariloche (CNEA). Elegido por pares investigadores que constituyen el departamento (2017-2021).

ITEDA, CAC,(2018-PRESENTE)

Aplicaciones de la detección de astropartículas (II): muongrafía de grandes estructuras artificiales y naturales de interés geofísico: evaluación del riesgo volcánico en América Latina, prospección minera, y densitometría en represas y diques.

Aplicaciones de simulaciones de astropartículas: aplicaciones en muongrafía, meteorología del espacio y diseño de nuevos detectores y blindajes de radiación.

PROYECTO LAGO (LATIN AMERICAN GIANT OBSERVATORY) (2007-PRESENTE)

Ver <http://lagoproject.net>

Responsable del Servicio Temático LAGO en el Proyecto Horizon-2020 EOSC-Synergy

Investigador Principal del Proyecto LAGO, período 2013-2016

Diseño y puesta en ejecución de la organización actual del Proyecto

Diseño y coordinación del programa de meteorología espacial del Proyecto

Simulaciones y análisis de datos para la detección de eventos transitorios (GRBs y eventos Forbush), radiación de fondo y física de la atmósfera.

Investigación, desarrollo y construcción de detectores tipo Cherenkov en agua en la Universidad Industrial de Santander y en el Centro Atómico Bariloche. Uno de ellos ha sido instalado y actualmente está operando en la Península Antártica.

Diseño y coordinación del experimento “Determinación de la Vida Media del Muón en Agua”, hecho por los estudiantes de grado del Instituto Balseiro.

LABORATORIO SUBTERRÁNEO ANDES (2011-2013, 2015-2016, 2018-PRESENTE)

Ver [www.andeslab.org](http://www.andeslab.org)

Estimación del fondo de radiación esperado en el laboratorio subterráneo ANDES debido a la radiactividad natural y al flujo de muones atmosféricos de alta energía.

Diseño del laboratorio.

Diseño de vetos de muones para los experimentos que serán instalados en ANDES

DOCENCIA (2009-PRESENTE)

**Profesor Asociado** cursos de: “Física Moderna A”, “Física IA”, “Física IB”, “Física IIB (Ondas)”, y actualmente “Física III B (Termodinámica)” y “Física IV B (Introducción a Física de Partículas, Astrofísica y Cosmología)”; del Profesorado de Nivel Medio y Superior en Física, Sede Andina, Universidad Nacional de Río Negro (UNRN); cursos de “Física de Astropartículas” y “Técnicas en detección de partículas” de la Carrera del Doble Doctorado en Astrofísica, Universidad Nacional de San Martín (UNSAM)

## Libros, capítulos y patentes

- |      |   |
|------|---|
| 2020 | 3. H. Asorey, C. Graziosi, A. López Dávalos, <a href="#">Física IA. De las galaxias a los quarks</a> , Colección Lecturas de Cátedra, Editorial UNRN, 334 pg, Viedma, Argentina, ISBN 978-987-4960-29-0, 2020                             |
| 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” |

## Formación de Recursos Humanos

Hasta el momento, me encuentro formando o he finalizado la formación de un total de 16 estudiantes y becarios: 2 investigadores posdoctorales, 3 estudiantes de la carrera del Doctorado en Física, 4 de la carrera de Maestría en Física y 7 de Licenciatura en Física en Argentina, Venezuela y Colombia.

## Resumen de publicaciones

127 publicaciones en revistas con referato.

86 participaciones y presentaciones en Escuelas y Conferencias.

25 reportes técnicos de la Comisión Nacional de Energía Atómica y notas técnicas (GAP Notes) del Observatorio Pierre Auger.

Ver la lista completa de publicaciones, trabajos y citas en alguno de los siguientes servicios:

ORCID : [orcid.org/0000-0002-4559-8785](https://orcid.org/0000-0002-4559-8785)

Google Scholar : [scholar.google.com.co/citations?user=Vj7\\_fGsAAAAJ](https://scholar.google.com.co/citations?user=Vj7_fGsAAAAJ)

Scopus : [www.scopus.com/authid/detail.url?authorId=35276880300](https://www.scopus.com/authid/detail.url?authorId=35276880300)

Inspire-HEP : [inspirehep.net/author/profile/H.Asorey.1](https://inspirehep.net/author/profile/H.Asorey.1)



Dr. Hernán Asorey, 18 de abril de 2022

## Apéndice: Lista completa de publicaciones

### TRABAJOS PUBLICADOS EN REVISTAS

- 2022 127. C. Sarmiento-Cano, M. Suárez-Durán, R. Calderón-Ardila, A. Vásquez-Ramírez, A. Jaimes-Motta, S. Dasso, I. Sidelnik, L. A. Núñez, H. Asorey, for the LAGO Collaboration, The ARTI Framework: Cosmic Rays Atmospheric Background Simulations Eur. J. Phys C enviado (2022) [arXiv:2010.14591](https://arxiv.org/abs/2010.14591)[astro-ph.IM]
- 2022 126. R. Calderon-Ardila, H. Asorey, A. Almela, A. Sedoski, C. Varela, N. Leal and M. Gomez-Berisso Development of Mudulus, a Muography detector based on double-synchronized electronics for Geophysical applications, J. Adv. Inst. Sci. enviado, (2022)
- 2022 125. A Taboada, C Sarmiento-Cano, A Sedoski, H Asorey [Meiga, a Dedicated Framework Used for Muography Applications](#), J. Adv. Inst. Sci. **2022** 01 (2022)
- 2022 124. J. Peña-Rodríguez, P. A. Salgado-Meza, H. Asorey, L. A. Núñez, A. Núñez-Castiñeyra, C. Sarmiento-Cano, M. Suárez-Durán RACIMO@Bucaramanga: A Citizen Science Project on Data Science and Climate Awareness, JINST enviado, (2022). [arXiv:2203.05431](https://arxiv.org/abs/2203.05431)[astro-ph.IM]
- 2022 123. J. Peña-Rodríguez, A. Vesga-Ramírez, A. Vásquez-Ramírez, M. Suárez-Durán, R. de León-Barrios, D. Sierra-Porta, R. Calderón-Ardila, J. Pisco-Guavabe, H. Asorey, J. D. Sanabria-Gómez, L. A. Núñez Muography in Colombia: simulation framework, instrumentation and data analysis, J. Adv. Inst. Sci. en prensa, (2022). [arXiv:2201.11160](https://arxiv.org/abs/2201.11160)[astro-ph.IM]
- 2022 122. The Pierre Auger Collaboration, [Testing effects of Lorentz invariance violation in the propagation of astroparticles with the Pierre Auger Observatory](#) JCAP **01** (2022) 023 [arXiv:2112.06773](https://arxiv.org/abs/2112.06773)[astro-ph.HE]
- 2021 121. The Pierre Auger Collaboration, [The energy spectrum of cosmic rays beyond the turn-down around  \$10^{17}\$  eV as measured with the surface detector of the Pierre Auger Observatory](#) Eur. Phys. J. C **81** 966 (2021)
- 2021 120. A Vesga-Ramírez, JD Sanabria-Gómez, D Sierra-Porta, L Arana-Salinas, H Asorey, VA Kudryavtsev, R Calderón-Ardila, LA Núñez, [Simulated Annealing for Volcano Muography](#), Journal of South American Earth Sciences **109** 103248 (2021) [arXiv:2005.08295](https://arxiv.org/abs/2005.08295)[physics.geo-ph]

- 2021 119. J. Sánchez-Villafrades, J. Peña-Rodríguez, H. Asorey, L. A. Núñez, Characterization and on-field performance of the MuTe Silicon Photomultipliers JINST enviado (2021) [arXiv:2102.01119](#)[physics.ins-det]
- 2021 118. The Pierre Auger Collaboration, [Design and implementation of the AMIGA embedded system for data acquisition](#) JINST **16** T07008 (2021) [arXiv:2101.11747](#)[astro-ph.IM]
- 2021 117. The Pierre Auger Collaboration, [Deep-learning based reconstruction of the shower maximum Xmax using the water-Cherenkov detectors of the Pierre Auger Observatory](#) JINST **16** P07019 (2021) [arXiv:2101.02946](#)[astro-ph.IM]
- 2021 116. The Pierre Auger Collaboration, [Extraction of the muon signals recorded with the surface detector of the Pierre Auger Observatory using recurrent neural networks](#) JINST **16** P07016 (2021) [arXiv:2103.11983](#)[hep-ex]
- 2021 115. The Pierre Auger Collaboration, [The FRAM robotic telescope for atmospheric monitoring at the Pierre Auger Observatory](#) JINST **16** P06027 (2021) [arXiv:2101.11602](#)[astro-ph.IM]
- 2021 114. The Pierre Auger Collaboration, [Measurement of the Fluctuations in the Number of Muons in Extensive Air Showers with the Pierre Auger Observatory](#) Phys. Rev. Lett. **126** 152002 (2021) [arXiv:2102.07797](#)[hep-ex]
- 2021 113. The Pierre Auger Collaboration, [Calibration of the underground muon detector of the Pierre Auger Observatory](#) JINST **16** P04003 (2021) [arXiv:2012.08016](#)[astro-ph.IM]
- 2021 112. The Pierre Auger Collaboration, [Design, upgrade and characterization of the silicon photomultiplier front-end for the AMIGA detector at the Pierre Auger Observatory](#) JINST **16** P01026 (2021) [arXiv:2011.06633](#)[astro-ph.IM]
- 2020 111. The Pierre Auger Collaboration, [Reconstruction of Events Recorded with the Surface Detector of the Pierre Auger Observatory](#) JINST **15** P10021 (2020) [arXiv:2007.04139](#)[astro-ph.IM]
- 2020 110. The Pierre Auger Collaboration, [A Search for Ultra-high-energy Neutrinos from TXS 0506+056 Using the Pierre Auger Observatory](#) ApJ **902** 105 (2020) [arXiv:2010.10953](#)[astro-ph.HE]
- 2020 109. The Pierre Auger Collaboration, [Features of the cosmic-ray energy spectrum above  \$2,5 \times 10^{18}\$  eV using the Pierre Auger Observatory](#) Phys. Rev. Lett. **125** 121106 (2020) [arXiv:2008.06488](#)[astro-ph.HE]
- 2020 108. The Pierre Auger Collaboration, [Measurement of the cosmic-ray energy spectrum above  \$2,5 \times 10^{18}\$  eV using the Pierre Auger Observatory](#) Phys. Rev. D **102** 062005 (2020) [arXiv:2008.06486](#)[astro-ph.HE]
- 2020 107. The Pierre Auger Collaboration, [The Pierre Auger Observatory and its Upgrade](#) Sci. Rev. End World **1** (4) 31 (2020)
- 2020 106. The Pierre Auger Collaboration, [Studies on the response of a water-Cherenkov detector of the Pierre Auger Observatory to atmospheric muons using an RPC hodoscope](#) JINST **15** P09002 (2020) [arXiv:2007.04139](#)[astro-ph.IM]
- 2020 105. The Pierre Auger Collaboration, [Direct measurement of the muonic content of extensive air showers between  \$2 \times 10^{17}\$  and  \$2 \times 10^{18}\$  eV at the Pierre Auger Observatory](#) Eur. Phys. J. C **80** 751 (2020)
- 2020 104. The Pierre Auger Collaboration, [Search for magnetically-induced signatures in the arrival directions of ultra-high-energy cosmic rays measured at the Pierre Auger Observatory](#) JCAP **2020** (06) 017 (2020) [arXiv:2004.10591](#)[astro-ph.HE]

- 2020 103. J Peña-Rodríguez, J Pisco-Guabave, D Sierra-Porta, M Suárez-Durán, M Arenas-Flórez, LM Pérez-Archila, JD Sanabria-Gómez, LA Núñez & H Asorey, [Design and construction of MuTe: a hybrid Muon Telescope to study Colombian Volcanoes](#), JINST **15** P09006 (2020) [arXiv:2004.09364](#)[physics.ins-det]
- 2020 102. The Pierre Auger Collaboration, [A 3-Year Sample of Almost 1,600 Elves Recorded Above South America by the Pierre Auger Cosmic-Ray Observatory](#), Earth and Space Science **7**(4) e2019EA000582 (2020)
- 2020 101. The Pierre Auger Collaboration, [Cosmic-Ray Anisotropies in Right Ascension Measured by the Pierre Auger Observatory](#), ApJ **891**(2) 142 (2020) [arXiv:2002.06172](#)[astro-ph.HE]
- 2020 100. Iván Sidelnik, Hernán Asorey, Nicolás Guarín, Mauricio Suárez Durán, José Lipovetzky, Luis Horacio Arnaldi, Martín Pérez, Miguel Sofo Haro, Mariano Gómez Berisso, Fabricio Alcalde Bessia & Juan Jerónimo Blostein, [Enhancing neutron detection capabilities of a water Cherenkov detector](#), NIM A **955** 163172 (2020)
- 2020 99. Iván Sidelnik, Hernán Asorey, Nicolás Guarín, Mauricio Suárez Durán, Mariano Gómez Berisso, José Lipovetzky & Juan Jerónimo Blostein, [Simulation of 500 MeV neutrons by using NaCl doped Water Cherenkov detector](#), Adv. Space Res. **65**(9) 2216-2222 (2020)
- 2020 98. Iván Sidelnik, Hernán Asorey, Nicolás Guarín, Mauricio Suárez Durán, Fabricio Alcalde Bessia, Luis Horacio Arnaldi, Mariano Gómez Berisso, José Lipovetzky, Martín Pérez, Miguel Sofo Haro & Juan Jerónimo Blostein, [Neutron detection capabilities of Water Cherenkov Detectors](#), NIM A **952** 161962 (2020)
- 2020 97. A Vásquez-Ramírez, M Suárez-Durán, A Jaimes-Motta, R Calderón-Ardila, J Peña-Rodríguez, J Sánchez-Villafrades, JD Sanabria-Gómez, L. A. Núñez & H Asorey, [Simulated Response of MuTe, a Hybrid Muon Telescope](#), JINST **15** O8004 (2020) [arXiv:1912.10081](#)[physics.ins-det]
- 2019 96. The Pierre Auger Collaboration, [Limits on point-like sources of ultra-high-energy neutrinos with the Pierre Auger Observatory](#), JCAP **2019**(11) 004 (2019) [arXiv:1906.07419](#)[astro-ph.HE]
- 2019 95. The Pierre Auger Collaboration, [Data-driven estimation of the invisible energy of cosmic ray showers with the Pierre Auger Observatory](#), PRD **100**082003 (2019) [arXiv:1901.08040](#)[astro-ph.IM]
- 2019 94. The Pierre Auger Collaboration, [Probing the origin of ultra-high-energy cosmic rays with neutrinos in the EeV energy range using the Pierre Auger Observatory](#), JCAP **2019**(10) 022 (2019) [arXiv:1906.07422](#)[astro-ph.HE]
- 2019 93. The Pierre Auger Collaboration, [Measurement of the average shape of longitudinal profiles of cosmic-ray air showers at the Pierre Auger Observatory](#), JCAP **2019**(03) 018 (2019) [arXiv:1811.04660](#)[astro-ph.HE]
- 2018 92. H Asorey, R Calderón-Ardila, K Forero-Gutiérrez, et al., [miniMuTe: A muon telescope prototype for studying volcanic structures with cosmic ray flux](#), Scientia et technica **23**(3) 386-391 (2018) [arXiv:1811.04660](#)[astro-ph.HE]
- 2018 91. H. Asorey, R. Calderón-Ardila, C. R. Carvajal-Bohorquez, et al [Astroparticle projects at the Eastern Colombia region: facilities and instrumentation](#), Scientia et technica **23**(3) 392-397 (2018)
- 2018 90. The Pierre Auger Collaboration, [Large-scale cosmic-ray anisotropies above 4 EeV measured by the Pierre Auger Observatory](#), APJ **868**(1) 4 (2018) [arXiv:1808.03579](#)[astro-ph.IM]
- 2018 89. The Pierre Auger Collaboration, [Observation of inclined EeV air showers with the radio detector of the Pierre Auger Observatory](#), JCAP **2018**(10) 026 (2018) [arXiv:1806.05386](#)[astro-ph.IM]



- 2018 88. H. Asorey, L. A. Nunez & C. Sarmiento-Cano, *Early Exposure of Digital Natives to Environments, Methodologies and Research Techniques in University Physics* Rev. Bras. Ensino Fis **40**(4) e5407 (2018) [arXiv:1501.04916](#)[physics.ed-ph]
- 2018 87. H. Asorey, L. A. Núñez, M. Suarez-Duran *Preliminary Results from The Latin American Giant Observatory Space Weather Simulation Chain* Space Weather **16**(5) 461–475 (2018) [arXiv:1802.08867](#)[physics.geo-ph]
- 2018 86. The Pierre Auger Collaboration, *An Indication of Anisotropy in Arrival Directions of Ultra-high-energy Cosmic Rays through Comparison to the Flux Pattern of Extragalactic Gamma-Ray Sources*, ApJ **L853**(2) L29 (2018) [arXiv:1801.06160](#)[astro-ph.CO]
- 2017 85. The Pierre Auger Collaboration, *Inferences on mass composition and tests of hadronic interactions from 0.3 to 100 EeV using the water-Cherenkov detectors of the Pierre Auger Observatory*, Phys. Rev. D **96** 122003 (2017) [arXiv:1710.07249](#)[astro-ph.HE]
- 2017 84. The Pierre Auger Collaboration, *Observation of a large-scale anisotropy in the arrival directions of cosmic rays above  $8 \times 10^{18}$  eV*, Science **357**(6357) 1266–1270 (2017) [arXiv:1709.07321](#)[astro-ph.HE]
- 2017 83. The Pierre Auger Collaboration, *Calibration of the Logarithmic-Periodic Dipole Antenna (LPDA) Radio Stations at the Pierre Auger Observatory using an Octocopter*, JINST **12** T10005 (2017) [arXiv:1702.01392](#)[astro-ph.IM]
- 2017 82. The Pierre Auger Collaboration, *Spectral calibration of the fluorescence telescopes of the Pierre Auger Observatory*, Astropart Phys **95** 44–56 (2017) [arXiv:1709.01537](#)[astro-ph.IM]
- 2017 81. 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 80. The Pierre Auger Collaboration, *Search for photons with energies above  $10^{18}$  eV using the hybrid detector of the Pierre Auger Observatory* JCAP **04** 009 (2017) [arXiv:1612.01517](#)[astro-ph.HE]
- 2017 79. 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 78. I. Sidelnik & H. Asorey, *LAGO: the Latin American Giant Observatory*, NIM-A **876** 173–175 (2017) [arXiv:1703.05337](#)[astro-ph.IM]
- 2017 77. 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 **876** 153–155 (2017)
- 2017 76. 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 75. The Pierre Auger Collaboration, *Ultrahigh-energy neutrino follow-up of gravitational wave events GW150914 and GW151226 with the Pierre Auger Observatory* Phys. Rev. D **94** 122007 (2016) [arXiv:1608.07378](#)[astro-ph.HE]
- 2017 74. The Pierre Auger Collaboration, *Multi-resolution anisotropy studies of ultrahigh-energy cosmic rays detected at the Pierre Auger Observatory* JCAP **06** 026 (2017) [arXiv:1611.06812](#)[astro-ph.HE]
- 2016 73. 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 72. 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 71. The Pierre Auger Collaboration, *Search for ultrarelativistic magnetic monopoles with the Pierre Auger observatory* Phys. Rev. **D94** 082002 (2016) [arXiv:1609.04451](#)[astro-ph.HE]
- 2016 70. The Pierre Auger Collaboration, *Energy estimation of cosmic rays with the Engineering Radio Array of the Pierre Auger Observatory* Phys. Rev. **D93** 122005 (2016) [arXiv:1508.04267](#)[astro-ph.HE]
- 2016 69. The Pierre Auger Collaboration, *The Pierre Auger Observatory Upgrade-Preliminary Design Report*, [arXiv:1604.03637](#)[astro-ph.IM]
- 2016 68. The Pierre Auger Collaboration, *Azimuthal asymmetry in the risetime of the surface detector signals of the Pierre Auger Observatory* Phys. Rev. **D93**, 072006 (2016) [arXiv:1604.00978](#)[astro-ph.HE]
- 2016 67. 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 66. 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 65. 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 64. The Pierre Auger Collaboration, *Energy Estimation of Cosmic Rays with the Engineering Radio Array of the Pierre Auger Observatory* Phys. Rev. **D93**, 122005 (2016) [arXiv:1508.04267](#)[astro-ph.HE]
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