Hernán Asorey

Departamento de Física Médica – Gerencia de Física
&
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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 177Lu 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-C035, 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 disposito 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, curaduraría y anonimización en grandes volúmenes de datos.

Jefe del Departamento Física Médica, dependiente de la Gerencia de Física, Gerencia de Investigación y Apliciones 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 el 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

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 IIIB (Termodinámica)" y "Física IV B (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, 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

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 citaciones en alguno de los siguientes servicios:

ORCID : orcid.org/0000-0002-4559-8785

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, 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[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 AsoreyMeiga, 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[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[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[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. **C81** 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[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 2×10^{17} and 2×10^{18} eV at the Pierre Auger Observatory Eur. Phys. J. **C80** 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 Guarin, Mauricio Suaréz 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 **A955** 163172 (2020)

2020 99. Iván Sidelnik, Hernán Asorey, Nicolás Guarin, Mauricio Suaréz 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 Guarin, Mauricio Suaréz 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 **A952** 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 Observatoryi*, 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 Fís **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* 8×10^{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. **D94** 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. **B762** 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]

2016 63. 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]

2015 62. The Pierre Auger Collaboration, *Measurement of the cosmic ray spectrum above* 4×10^{18} *eV using inclined events detected with the Pierre Auger Observatory* JCAP **08** 049 (2015) arXiv:1503.07786[astro-ph.HE]

2015 61. The Pierre Auger Collaboration, *The Pierre Auger Cosmic Ray Observatory* NIM **A 798** 172–213 (2015) arXiv:1502.01323[astro-ph.HE]

2015 60. The Pierre Auger Collaboration, *Improved limit to the diffuse flux of ultrahigh energy neutrinos from the Pierre Auger Observatory* Phys. Rev. **D91**, 092008 (2015) arXiv:1504.05397[astro-ph.HE]

2015 59. The Pierre Auger Collaboration, *Large scale distribution of ultra high energy cosmic rays detected at the Pierre Auger Observatory with zenith angles up to 80 degrees* ApJ **802**, 111 (2015) arXiv:1411.6953[astro-ph.HE]

2015 58. The Pierre Auger Collaboration, *Searches for Anisotropies in the Arrival Directions of the Highest Energy Cosmic Rays Detected by the Pierre Auger Observatory*, ApJ **804**, 15 (2015) arXiv:1411.6111[astro-ph.HE]

2015 57. The Pierre Auger Collaboration, *Search for patterns by combining cosmic-ray energy and arrival directions at the Pierre Auger Observatory* Eur. Phys. J., **C75** 269 (2015) arXiv:1410.0515[astro-ph.HE]

2015 56. The Pierre Auger Collaboration, *Muons in air showers at the Pierre Auger Observatory: Mean number in highly inclined events* Phys. Rev. **D91** 3, 032003 (2015) arXiv:1408.1421[astro-ph.HE], Errata: Phys. Refv. **D91** 059901 (2015)

2014 55. The Pierre Auger Collaboration, *Depth of maximum of air-shower profiles at the Pierre Auger Observatory: II. Composition implications* Phys. Rev. **D90** 12, 122006 (2014) arXiv:1409.5083[astro-ph.HE]

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2009 15. H. Asorey[Pierre Auger Collaboration], *Cosmic Ray Solar Modulation Studies at the Pierre Auger Observatory*, en Proc. 31th International Cosmic Ray Conference, Lodz, Poland, 8–15 Jul 2009.

2009 14. The Pierre Auger Collaboration, *Astrophysical Sources of Cosmic Rays and Related Measurements with the Pierre Auger Observatory*, en Proc. 31th International Cosmic Ray Conference, Lodz, Poland, 8–15 Jul 2009.

2009 13. The LAGO Collaboration,*Operating Water Cherenkov Detectors in high altitude sites for the Large Aperture GRB Observatory*, en Proc. 31th International Cosmic Ray Conference, Lodz, Poland, 8–15 Jul 2009.

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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. Charla invitada "Towards Cosmic ray Solar Modulation Studies", University of Siegen, Siegen, Germany, 2008.

2007 7. 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 6. IV Latin American School of Strings LASS 07, San Carlos de Bariloche, January 2007.

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2006 4. D. Allard *et* al. [LAGO Collaboration], *The Large Aperture GRB aperture*, en 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.

2005-2015

1. Treinta y siete charlas físicas y técnicas dadas en los Encuentros Anuales de la Colaboración Pierre Auger, Malargüe, Argentina.