

CURRICULUM VITAE
NOVEMBER 22, 2019

CONTACT INFORMATION	Daniel Nieto Castaño Date of birth: 23 of August, 1983 Nationality: Spanish	nieto@gae.ucm.es www.gae.ucm.es/~nieto ORCID: 0000-0003-3343-0755 ResearchID: J-7250-2015 Scopus ID: 18936208000 Google Scholar: YjEXg4IAAAAJ
RESEARCH INTERESTS	Astroparticle physics, high-energy astrophysics, dark matter searches, gravitational-wave electromagnetic counterparts, cosmology	
PROFESSIONAL INTERESTS	Astronomical instrumentation, imaging atmospheric Cherenkov telescopes, data analysis, machine learning, deep learning	
EDUCATION	<i>Universidad Complutense de Madrid</i> , Madrid, Spain <ul style="list-style-type: none">○ Ph.D., Physics, February 2012<ul style="list-style-type: none">▷ Dissertation (<i>cum laude</i>): <i>Dark matter constraints from high-energy astrophysical observations</i>▷ Adviser: Dr. Juan Abel Barrio○ M.S., Theoretical Physics, September 2006○ B.S., Fundamental Physics, July 2005	
PROFESSIONAL EXPERIENCE	<ul style="list-style-type: none">○ March 2017 – present: <i>Research Scientist</i> in the Department of Atomic, Molecular, and Nuclear Physics of Universidad Complutense de Madrid. Funding: Spanish Ministry of Economy, Industry, and Competitiveness / European Union ERDF.○ March 2012 – February 2017: <i>Postdoctoral Research Scientist</i> in the Physics Department of Columbia University in the City of New York. Funding: Columbia University in the City of New York / NASA.○ September 2011 – February 2012: <i>Research Staff</i> contract within the Consolider-Ingenio program <i>Multimessenger Approach for Dark Matter Detection</i>. Universidad Complutense de Madrid – Universidad Autónoma de Madrid. Funding: Spanish Ministry of Science and Innovation.	
GRANTS AND FELLOWSHIPS	<ul style="list-style-type: none">○ March 2017 – February 2020: Principal Investigator: <i>RDI projects for young researchers</i> award for the project <i>Enhancing our vision of the Universe in gamma-rays: implementation of novel analysis technics towards the optimization of the performance of the Cherenkov Telescope Array</i>. Funded by: Spanish Ministry of Economy, Industry, and Competitiveness / European Union ERDF. Reference: FPA2015-73913.○ September 2014 – August 2015: Principal Investigator: <i>Fermi Guest Investigator Program – Cycle 7</i> award for the project <i>Uncovering dark matter subhalos with Fermi-LAT and VERITAS</i>. Funded by: National Aeronautics and Space Administration. Reference: NNX14AQ70G.○ September 2007 – August 2011: <i>Research Staff Training Program</i> (Formación de Personal Investigador) scholarship within the project <i>High-Energy Astrophysics with MAGIC</i>. Universidad Complutense de Madrid. Funded by: Spanish Ministry of Education and Science. Reference: FPA2006-12383-C02-01○ November 2006 – August 2007: <i>Support Researcher</i> working for the project <i>High-Energy Astrophysics with MAGIC</i>. Universidad	

Complutense de Madrid.
Funded by: Spanish Ministry of Education and Science.
Reference: FPA2006-12383-C02-01

○ **March 2006 – July 2006:**

ESA Trainee position at the European Space Astronomy Center (ESAC) in Villafranca Satellite Tracking Station, within the *XMM-Newton* project.

○ **August 2004 – June 2005:**

Erasmus exchange student at Ångströmlaboratoriet, Uppsala University, Sweden.

Funded by: European Union, Community of Madrid, and Universidad Complutense de Madrid.

TECHNICAL
RESPONSIBILITIES

- Coordinator of the Machine Learning task force within the Cherenkov Telescope Array (CTA) Consortium (2017 – present).
- Contributor to the Monte Carlo simulation studies of the Schwarzschild-Couder medium-sized telescope (SC-MST) as a stand-alone instrument and as integrating part of CTA. Coordinator of the SC-MST Monte Carlo simulations working group within CTA (2016 – 2017).
- Responsible for the design and production of positional sensors (mirror panel edge sensors) for the panel-to-panel alignment system of the SC-MST for CTA (2012 – 2017).
- Responsible for the development and maintenance of the MAGIC Telescope on-site data analysis pipeline (2008 – 2011).

INTERNSHIPS AND
RESEARCH VISITS

Research Institutions

- Columbia University, Nevis Laboratories, New York, USA (May 2017)
- University of California Los Angeles, Laboratory of High Energy Astrophysics, Los Angeles, USA (January 2016)
- University of California Los Angeles, Laboratory of High Energy Astrophysics, Los Angeles, USA (April 2016)
- Swiss Federal Institute of Technology, Zurich, Switzerland (March – July 2009).

International Research Facilities

- VERITAS Telescope, *shift leader* (USA, May 2019)
- VERITAS Telescope, *operator* (USA, January 2016)
- MDM McGraw-Hill Telescope, *single operator* (USA, October 2014)
- VERITAS Telescope, *operator* (USA, October 2014)
- MDM McGraw-Hill Telescope, *single operator* (USA, December 2013)
- VERITAS Telescope, *operator* (USA, November 2013)
- VERITAS Telescope, *operator* (USA, April 2012)
- MAGIC Telescope, *shift leader* (Spain, November 2009)
- MAGIC Telescope, *deputy shift leader* (Spain, December 2008)
- MAGIC Telescope, *operator* (Spain, November 2007).
- ESCA-Laser Laboratory - Ångströmlaboratoriet, *laboratory assistant* (Sweden, February–May 2005).

PUBLICATIONS

Citation metrics, starting 2007 (from Scopus)

- Articles in refereed journals: 138
- Times cited: 6041
- h-index: 41

Selected publications

- D. Nieto, J. A. Barrio, M. A. Sánchez-Conde, *High Galactic latitude, unassociated gamma-ray sources: uncovering dark matter subhalos in the MeV band*, in A. De Angelis *et al.* [e-ASTROGAM Collaboration], *Science with e-ASTROGAM: A space mission for MeV–GeV gamma-ray astrophysics*, JHEAp **19**, 1 (2018)
doi:10.1016/j.jheap.2018.07.001, [arXiv:1711.01265 [astro-ph.HE]]
- I. Bartos, [...], D. Nieto *et al.*, *Strategies for the Follow-up of Gravitational Wave Transients with the Cherenkov Telescope Array*, Mon. Not. Roy. Astron. Soc. **477**, no. 1, 639 (2018)
doi:10.1093/mnras/sty602, [arXiv:1802.00446 [astro-ph.HE]]
- I. Bartos, P. Veres, D. Nieto *et al.*, *Cherenkov Telescope Array is Well Suited to Follow Up Gravitational Wave Transients*, Mon. Not. Roy. Astron. Soc. **443**, 738 (2014)

doi:10.1093/mnras/stu1205, arXiv:1403.6119 [astro-ph.HE]

- M. Doro *et al.* [CTA Consortium], *Dark Matter and Fundamental Physics with the Cherenkov Telescope Array*, *Astropart. Phys.* **43** (2012) 189
doi:j.astropartphys.2012.08.002, arXiv:1208.5356 [astro-ph.IM]
- J. Aleksić *et al.* [The MAGIC Collaboration], *Searches for Dark Matter annihilation signatures in the Segue 1 satellite galaxy with MAGIC-I Telescope*, *JCAP* 1106:035 (2011).
<http://dx.doi.org/10.1088/1475-7516/2011/06/035>, arXiv:1103.0477 [astro-ph.HE]
- E. Aliu *et al.* [The MAGIC Collaboration], *Upper limits on the VHE gamma-ray emission from the Willman 1 satellite galaxy with the MAGIC Telescope*, *Astrophys. J.* **697** (2009) 1299-1304.
<http://dx.doi.org/10.1088/0004-637X/697/2/1299>, arXiv:0810.3561 [astro-ph]
- Complete list of publications available upon request.

Preprints

- D. Nieto, N. Mirabal, *Willman 1: An X-ray shot in the dark with Chandra*, (2011).
arXiv:1003.3745 [astro-ph.CO]
- N. Mirabal, D. Nieto, S. Pardo, *The exotic fraction among unassociated Fermi sources*, (2010).
arXiv:1007.2644[astro-ph.CO]

INVITED TALKS

- D. Nieto, *Brief Introduction to High-Energy Gamma-Ray Astrophysics*, Research Experiences for Undergraduates at Nevis Laboratories, Columbia University, New York (July 2015).
- D. Nieto, *High-Energy Gamma-Ray Astrophysics*, Society of Physics Students at Columbia University, New York (November 2013).
- D. Nieto, *Dark Matter Searches with High-Energy Astrophysical Observations*, Special Seminar, Columbia University, New York (November 2011).

SELECTED CONFERENCE CONTRIBUTIONS

- D. Nieto [CTA Consortium], *Prototype 9.7 m Schwarzschild-Couder telescope for the Cherenkov Telescope Array: status of the optical system*, 35th International Cosmic Ray Conference, Busan, South Korea (July 2017).
doi:10.22323/1.301.0815, arXiv:1709.06324 [astro-ph.IM]
- D. Nieto [CTA Consortium], *Exploring deep learning as an event classification method for the Cherenkov Telescope Array* (poster), 35th International Cosmic Ray Conference, Busan, South Korea (July 2017).
doi:10.22323/1.301.0809, arXiv:1709.05889 [astro-ph.IM]
- D. Nieto [for the VERITAS Collaboration], *Scrutinizing the gamma-ray sky for dark matter subhalos* (talk), American Physical Society Meeting, Salt Lake City, USA (April 2016).
- D. Nieto [for the VERITAS Collaboration], *Uncovering dark matter subhalos with Fermi-LAT and VERITAS* (talk), Sixth International Fermi Symposium, Washington D.C. (November 2015).
- D. Nieto [for the VERITAS Collaboration], *The VERITAS program on indirect dark matter searches* (poster), Sixth International Fermi Symposium, Washington D.C. (November 2015).
- D. Nieto *et al.* [for the VERITAS Collaboration], *Hunting for dark matter subhalos among the Fermi-LAT sources with VERITAS* (poster), 34th International Cosmic Ray Conference, The Hague, The Netherlands (August 2015).
doi:10.22323/1.236.1216, arXiv:1509.00085[astro-ph.HE]
- D. Nieto *et al.* [CTA Consortium], *Construction of a medium-sized Schwarzschild-Couder telescope as a candidate for the Cherenkov Telescope Array: development of the optical alignment system* (poster), 34th International Cosmic Ray Conference, The Hague, The Netherlands (August 2015).
doi:10.22323/1.236.0990, arXiv:1509.02463[astro-ph.IM]
- D. Nieto [for the VERITAS Collaboration], *Indirect Dark matter Searches with VERITAS* (talk), Roma International Conference on Astroparticle Physics (RICAP), Noto, Italy (2014).
- D. Nieto *et al.*, *Following Up Gravitational Wave Transients with the Cherenkov Telescope Array* (poster), Roma International Conference on Astroparticle Physics (RICAP), Noto, Italy (2014).
- D. Nieto [for the CTA Consortium], *Dark matter detection prospects with the Cherenkov Telescope Array* (talk), 13th International Conference on Topics in Astroparticle and Underground Physics Asilomar, California USA (2013).
- D. Nieto *et al.*, *A search for dark matter subhalo candidates in the gamma-ray band* (poster), 13th International Conference on Topics in Astroparticle and Underground Physics Asilomar, California USA (2013).
- D. Nieto *et al.*, *Search for Dark Matter Subhalos in the High-Energy Gamma-ray Band with Fermi*

- and the Cherenkov Telescope Array, contribution to the Community Summer Study (Snowmass) 2013, Cosmic Frontier Group.
arXiv:1305.0312[astro-ph.HE]
- D. Nieto [for the CTA Consortium], *Dark matter detection prospects for the Cherenkov Telescope Array* (poster), Fourth Fermi Symposium, Monterey CA, USA (2012).
 - D. Nieto [for the MAGIC Collaboration], *The search for galactic Dark Matter clump candidates with Fermi and MAGIC* (talk), 32nd International Cosmic Ray Conference, Beijing, China (2011).
arXiv:1109.5935[astro-ph.HE]
 - D. Nieto [for the CTA Consortium], *On the Detectability of Dwarf Galaxies with the Cherenkov Telescope Array* (poster), 32nd International Cosmic Ray Conference, Beijing, China (2011).
arXiv:1111.2183[astro-ph.HE]
 - Complete list of conference contributions available upon request.

REVIEWER

- Astroparticle Physics, Elsevier

MEMBERSHIPS

- Member of the Cherenkov Telescope Array Consortium
- Member of the VERITAS Collaboration
- Member of the *American Physical Society*
- Member of the *Spanish Astronomical Society*
- Member of the *Multimessenger Approach for Dark Matter Detection* (MultiDark) Consolider Network (2017 – present)
- Member of the *Multimessenger Approach for Dark Matter Detection* (MultiDark) Project (2009 – 2017)
- Member of the MAGIC Collaboration (2006 – 2011)

ACADEMIC EXPERIENCE

- Thesis adviser at undergraduate, graduate and post-graduate levels (2017 – present)
- Lecturer of *Mathematics* at Universidad Complutense de Madrid, undergraduate Physics program (2018 – 2019)
- Lecturer of *Biology applied physics* at Universidad Complutense de Madrid, undergraduate Biology program (2018 – 2019)
- Lecturer of *Biology applied physics* at Universidad Complutense de Madrid, undergraduate Biology program (2017 – 2018)
- Mentor of undergraduate and graduate students at Columbia University (2012 – 2017)
- Lecturer on the National Science Foundation REU program at Nevis Laboratories, Columbia University (June 2015)
- Mentor on the Science Research Mentoring Program at the American Museum of Natural History (2014 – 2015)
- Mentor on the National Science Foundation REU program at Nevis Laboratories, Columbia University (Summer 2014)
- Mentor on the National Science Foundation REU program at Nevis Laboratories, Columbia University (Summer 2013)
- Lecturer on the Science Honor Program at Columbia University (December 2012)
- Mentor on the National Science Foundation REU program at Nevis Laboratories, Columbia University (Summer 2012)
- Mentor on the MultiDark Summer Students program (August 2010)
- Pedagogical Aptitude Certificate (Teaching Certificate), Universidad Complutense de Madrid (2007)

COMPUTER SKILLS

- Operating Systems: Unix/Linux (admin. level), Mac OSX (admin. level), MS Windows
- Embedded Systems: ARM-based computers, Yocto, Poky
- Languages: C++, Python, Unix shell scripting
- Analysis: ROOT, PyRAF, Fermi-LAT Science Tools (FST)
- Machine learning: TensorFlow, Keras
- Databases: MySQL
- Applications: L^AT_EX
- Algorithms: DarkSUSY
- Version control: Git, SVN, CVS

- CAD Software: SolidWorks, AutoCAD

LANGUAGES

- Spanish (Mother tongue)
- English (Proficient)
- French (Basics)

MISCELLANEA

- Basic First Aid (CPR) Course by the Spanish Red Cross
- Car driving license