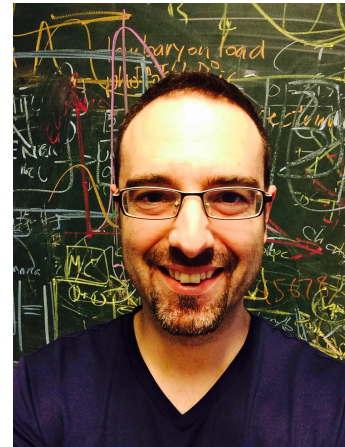


CURRICULUM VITAE

PANEQUE CAMARERO, DAVID

PERSONAL DATA

Place of birth/Nationality: Barcelona (Spain) / Spanish
Date of birth: March 11th, 1975
Present work address: Max-Planck-Institut für Physik
Föhringer Ring 6,
80805-D München, Germany
e-mail: dpaneque@mppmu.mpg.de
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EDUCATION

- 07/2001 – 11/2004 **PhD in Physics from the Technische Universität (TU) München**
Grade: *Summa Cum Laude*
PhD Thesis: *The MAGIC Telescope: developments of new technologies and first observations.*
Advisors: Prof. Dr. Siegfried Bethke and Dr. Eckart Lorenz
- 09/1998 – 09/2000 **M.Sc. in Physics from the Universitat Autònoma de Barcelona (UAB)**
Grade: *Summa Cum Laude*
Master's Thesis: *An optical properties study of the new hemispherical PMTs from Electron Tubes*
Advisors: Prof. Dr. Enrique Fernández and Prof. Dr. Manel Martínez
- 09/1993 – 07/1998 **B.Sc. in Physics from the UAB**

WORKING EXPERIENCE

- 11/2010 – Present **Senior scientist position at the Max-Planck-Institut für Physik (Werner-Heisenberg-Institut, München)** to work on MAGIC, *Fermi*-LAT, and CTA
- 08/2019 – 11/2019 **Visiting professor at the University of Tokyo (Institute for Cosmic Ray Research)** to work on the *Fermi*-LAT, MAGIC and CTA projects
- 09/2014 – 12/2014 **Visiting associate professor at the University of Tokyo (Institute for Cosmic Ray Research)** to work on the *Fermi*-LAT, MAGIC and CTA projects
- 04/2006 – 11/2010 **Research associate position at SLAC National Accelerator Laboratory** to work on *Fermi* (formerly named GLAST).
- 11/2004 – 04/2006 **Postdoc at the Max-Planck-Institut für Physik** to work on the data analysis of the MAGIC Telescope, and construction of the camera for the second MAGIC Telescope.
- 07/2001 – 11/2004 **Research Staff Formation Grant given by the Max-Planck-Institut für Physik**, to obtain a PhD from the TU München. I participated in the design and construction of the camera of the MAGIC telescope, and in the analysis of the first data.
- 09/1998 – 07/2001 **Research Staff Formation Grant given by the Generalitat de Catalunya (Autonomous Government of Catalonia, Spain)** to work in the Institut de Física d'Altes Energies (IFAE), Barcelona. During this time, I worked for two projects, the ALEPH collaboration (at CERN), and MAGIC Telescope, where I obtained my Master's Degree in Physics.

PRIZES AND AWARDS

- 2011 Bruno Rossi Prize (given to the members of the *Fermi*-LAT collaboration), which is awarded annually in honor of Bruno Rossi for a significant contribution to High Energy Astrophysics, with particular emphasis on recent, original work.
- 2010 NASA Group Achievement Award (given to the *Fermi* Science team), for the successful early operation of the *Fermi* mission and discovery of new high-energy γ -ray sources.
- 2008 NASA Group Achievement Award (given to the Large Area Telescope team), for producing a prominent scientific instrument that will advance NASA's space science mission.
- 2005 **PhD thesis awarded with the Otto Hahn Medal from the Max-Planck-Society, which is awarded annually to about 25 junior scientists (in both the natural and social sciences) in recognition of outstanding scientific achievement.**
- 1998 **B.Sc. studies awarded with the Premio Extraordinario from the UAB, which is a special award given to the two people with the best qualifications among the people graduating that year.**

RESEARCH GRANTS

- 2019 – 2026 **Excellence Cluster (Co-Investigator):**
"Connector 6: Cosmic Accelerators"
- 2010 – 2012 **NASA Fermi GI (Principal Investigator):**
"The Extreme Fermi Universe" (NNX10AP21G)
- 2009 – 2011 **NASA Fermi GI (Principal Investigator):**
"Simultaneous Fermi LAT-MAGIC Observations of the Late Prompt and Early Afterglow Emission From GRBs" (NNX10AP22G)

PROFESSIONAL DUTIES

- Co-Spokesperson of the MAGIC collaboration (2020-present)
- Physics coordinator of the MAGIC collaboration (2017-2019)
- Publication manager and chair of editorial board within the MAGIC collaboration (2012-2016)
- Responsible person for the calibration system in MAGIC (2011-present)
- Member of the Executive board in the MAGIC collaboration (2012-present)
- Responsible person for the scientific activities of the gamma-ray group at MPP (2012-present)
- Main responsible person for the MPP experimental gamma-ray group report for the 2019 advisory committee evaluation of MPP activities
- Main responsible person for the MPP experimental gamma-ray group report for the 2016 advisory committee evaluation of MPP activities
- Main responsible person for the MPP experimental gamma-ray group report for the 2013 advisory committee evaluation of MPP activities
- Grant proposal reviewer for NASA Fermi Guest Investigator Grant every year from 2010 until 2013 (~8M\$ annually)
- Responsible person for AGN science report for *Rossi* XTE satellite NASA senior review in 2010
- Referee for The Astrophysical Journal (ApJ), Astronomy and Astrophysics (A&A), and Monthly Notices of the Royal Astronomical Society (MNRAS)

LANGUAGES

Spanish and Catalan: Mother languages.
English: Very good level reading, writing and speaking.
Italian: Medium level reading, writing and speaking.
German: Basic level reading and speaking.
Japanese: Low level of understanding/speaking (“3-year-old child level”).

COMPUTING EXPERIENCE

Operative systems: MS-DOS, Windows NT, Unix, Linux, MacOSX, QTS.
Programming languages: C, C++, LabView.
Scripting languages: bash, csh, python, CINT.
Simulation packages: EGS5, GEANT4.

OTHERS

Military Service: *Base Aerea de Son San Juan*, Palma de Mallorca, Spain, December 1994 - August 1995

Last updated: August 2020

PUBLICATIONS

My involvement with the MAGIC Telescope and the *Fermi* Satellite at the pre-commencement stage implied spending a large fraction of my research time on developing relevant hardware and/or software projects. This so-called *service work* often did not result in a scientific publication, but they were crucial for the scientific success of these instruments (see below for some examples). Owing to my continuous technical contributions to these projects, I am co-author of most of the collaboration papers. Moreover, I also led myself several of these scientific publications. **In total, I have more than 450 scientific publications, including 4 Nature and 25 Science publications, providing me with a h-index of 109.** The full list of my publications can be found at this ADS link.

Selection of five scientific publications

Among the various publications in which I played a leading role, here I list 5 that had a large impact in the community. The publications relate to diverse scientific topics: three of them relate to black holes and blazars, one about a catalog of high-energy γ -ray sources, and one about the possibility to discover new particles using γ -ray observations of blazars. The publications are sorted chronologically, and the number of citations were retrieved from ADS on August 28th, 2020. **The number of citations is larger than 100** for all these publications, which demonstrates my ability to make high-quality scientific publications on topics of interest for the gamma-ray community. It is worth mentioning that 4 out of the 5 scientific publications listed here were done within the MAGIC and/or *Fermi*-LAT collaborations. These papers have long author lists with names sorted alphabetically (as it is custom in high-energy particle physics), despite the fact that I am the lead author in all these publications.

1. *The First Fermi-LAT Catalog of Sources Above 10 GeV*, [ADS link](#)
Abdo et al., *Fermi* Collaboration
(lead author: **D. Paneque**), 2013, *Astrophysical Journal Supplement Series*, 209, 34
Work related to my efforts to characterize the very-high-energy (VHE) γ -ray sky, and particularly to increase the number of known extragalactic VHE sources.
Number of citations: 185
2. *Fermi Large Area Telescope Observations of Markarian 421: The Missing Piece of its Spectral Energy Distribution*, [ADS link](#)
Abdo et al., *Fermi*, & MAGIC Collaborations
(lead author: **D. Paneque**), 2011, *ApJ*, 736, 131
Work related to the extensive multifrequency campaigns that I started to organize in 2009.
Number of citations: 208
3. *Insights Into the High-energy γ -ray Emission of Markarian 501 from Extensive Multifrequency Observations in the Fermi Era*, [ADS link](#)
Abdo et al., *Fermi*, MAGIC & VERITAS Collaborations
(lead author: **D. Paneque**), 2011, *ApJ*, 727, 129
Work related to the extensive multifrequency campaigns that I started to organize in 2009.
Number of citations: 170
4. *Hints of the existence of Axion-Like Particles from the γ -ray spectra of cosmological sources*, [ADS link](#)
M. Sánchez-Conde, **D. Paneque**, E. Bloom, F. Prada, A. Domínguez, 2009, *Phys. Rev. D*, 79, 123511
Work related to the studies performed (with former graduate student M. Sánchez-Conde) on the feasibility to use VHE AGNs to detect (discover) Axion-Like-Particles (ALPs).
Number of citations: 119
5. *Variable Very High Energy γ -ray emission from Markarian 501*, [ADS link](#)
Albert et al., MAGIC collaboration (lead author: **D. Paneque**), 2007, *ApJ*, 669, 862
Work related to the extensive study of some selected VHE AGNs.
This publication showed the large scientific potential of observing the classical TeV blazars with the new generations of γ -ray instruments, such as MAGIC.
Number of citations: 429 (It is the most cited paper of the MAGIC collaboration)

Publications in referred journals with leading (or very active) participation

In this section I list the publications where I played a significant role. The publications are sorted chronologically.

Most of the publications listed here were done within the MAGIC and/or *Fermi*-LAT collaborations. These papers have long author lists with names sorted alphabetically, as it is custom in high-energy particle physics. There are some (MAGIC and/or *Fermi*) collaboration publications where I contributed in a very significant manner, being sometimes one of the corresponding authors, but I was not leading the work, and my participation was not crucial. However, in most cases, I was the lead author of the publication, which implied being the main responsible person for the contents of the publication, and writing most of the text of the document. In some occasions, I initiated the project (e.g. using the extensive data from the multi-year and multi-instrument observation campaigns that I regularly organize), and contributed in a crucial manner to the contents and the text of the publication, but there was another scientist (mostly a former PhD student and/or postdoc) who took large responsibility in the preparation of the publication. Sometimes, this scientist, working together with me, also took responsibility for the submission of the manuscript to the journal. These (MAGIC and/or *Fermi*) collaboration publications where I played a leading role are denoted with the string “Lead author(s): D. Paneque (+ ...)”, in order to differentiate them from the others.

1. *Unraveling the Complex Behavior of Mrk 421 with Simultaneous X-Ray and VHE Observations during an Extreme Flaring Activity in 2013 April*,
Acciari V.A. et al., MAGIC and Fermi-LAT collaborations
(lead authors: **D. Paneque** and A. Babic)
2020, ApJS, 248, 29
2. *Study of the variable broadband emission of Markarian 501 during the most extreme Swift X-ray activity*,
Acciari V.A. et al., MAGIC and Fermi-LAT collaborations
(lead authors: J. Becerra and **D. Paneque**)
2020, A&A, 637, 86
3. *The Great Markarian 421 Flare of 2010 February: Multiwavelength Variability and Correlation Studies*,
Abeysekara, A. U et al., VERITAS and MAGIC collaborations
(publication using data from the observing campaigns organized by **D. Paneque**)
2020, ApJ, 890, 97
4. *Stable Radio Core of the Blazar Mrk 501 during High-energy Active State in 2012*,
Shoko Koyama, Motoki Kino, Akihiro Doi, Kotaro Niinuma, Marcello Giroletti, **David Paneque**,
Kazunori Akiyama, Gabriele Giovannini, Guang-Yao Zhao, Eduardo Ros, Jun Kataoka, Monica Ori-
enti, Kazuhiro Hada, Hiroshi Nagai, Naoki Isobe, Hideyuki Kobayashi, Mareki Honma, and Rocco
Lico
2019, ApJ, 884, 132
5. *Measurement of the extragalactic background light using MAGIC and Fermi-LAT gamma-ray observa-
tions of blazars up to $z = 1$* ,
Acciari, V. A. et al., MAGIC collaboration
(publication using data from the observing campaigns organized by **D. Paneque**)
2019, MNRAS, 486, 4233
6. *The extreme HBL behaviour of Mrk 501 during 2012*,
Ahnen M.L. et al., MAGIC, VERITAS and Fermi-LAT collaborations
(lead authors: G. Hughes and **D. Paneque**)
2018, A&A, 620, 181

7. *Multiband variability studies and novel broadband SED modeling of Mrk 501 in 2009*,
Ahnen M.L. et al., MAGIC, VERITAS and Fermi-LAT collaborations
(lead authors: **D. Paneque** and M. Doert (former PhD student))
2017, A&A, 603, 31
8. *A Search for Spectral Hysteresis and Energy-dependent Time Lags from X-Ray and TeV Gamma-Ray Observations of Mrk 421*,
Abeysekara, A. U., VERITAS and MAGIC collaborations
(publication using data from the observing campaigns organized by **D. Paneque**)
2017, ApJ, 834, 2
9. *Very high energy outburst of Markarian 501 in May 2009*
(publication using data from the observing campaigns organized by **D. Paneque**)
Aliu, E. et al., VERITAS collaboration
2016, A&A, 594, 76
10. *Long-term multi-wavelength variability and correlation study of Markarian 421 from 2007 to 2009*
Ahnen M.L. et al., MAGIC collaboration
(publication using data from the observing campaigns organized by **D. Paneque**)
2016, A&A, 593, 91
11. *Multiwavelength Study of Quiescent States of Mrk 421 with Unprecedented Hard X-Ray Coverage Provided by NuSTAR in 2013*,
Balokovic, M., **Paneque, D.** et al., NuSTAR, MAGIC, VERITAS and Fermi-LAT collaborations
(lead authors: Mislav Balokovic (former PhD student) and **D. Paneque**)
2016, ApJ, 819, 156
12. *First NuSTAR Observations of Mrk 501 within a Radio to TeV Multi-Instrument Campaign*
Furniss, A., et al., NuSTAR, VERITAS, MAGIC and Fermi collaborations
(publication using data from the observing campaigns organized by **D. Paneque**)
2015, ApJ, 812, 65
13. *Probing the precise location of the radio core in the TeV blazar Mrk 501 with VERA at 43 GHz*
Shoko Koyama, Motoki Kino, Akihiro Doi, Kotaro Niinuma, Kazuhiro Hada, Hiroshi Nagai, Mareki Honma, Kazunori Akiyama, Marcello Giroletti, Gabriele Giovannini, Monica Orienti, Naoki Isobe, Jun Kataoka, **David Paneque**, Hideyuki Kobayashi, Keiichi Asada
2015, PASJ, 67, 67
14. *Unprecedented study of the broadband emission of Mrk 421 during flaring activity in March 2010*,
Aleksić, J., et al., MAGIC, VERITAS and Fermi-LAT collaborations
(lead authors: Shangyu Sun (former PhD student) and **D. Paneque**)
2015, A&A, 578, 22
15. *The 2009 multiwavelength campaign on Mrk 421: Variability and correlation studies*,
Aleksić, J., et al., MAGIC, VERITAS and Fermi-LAT collaborations
(lead authors: **D. Paneque** and Nina Nowak)
2015, A&A, 576, 126
16. *Multiwavelength observations of Mrk 501 in 2008*,
Aleksić, J., et al., MAGIC, and VERITAS collaborations
(lead author: **D. Paneque**)
2015, A&A, 573, 50
17. *First broadband characterization and redshift determination of the VHE blazar MAGIC J2001+439*,
Aleksić, J., et al., MAGIC collaboration
(lead authors: Kazuhito Kodani (former PhD student) and **D. Paneque**)
2014, A&A, 572, 121

18. *Very Long Baseline polarimetry and the γ -ray connection in Markarian 421 during the broadband campaign in 2011*
R. Lico, M. Giroletti, M. Orienti, J. L. Gomez, C. Casadio, F. D'Ammando, M. G. Blasi, W. Cotton, P. G. Edwards, L. Fuhrmann, S. Jorstad, M. Kino, Y. Y. Kovalev, T. P. Krichbaum, A. P. Marscher, **D. Paneque**, B. G. Piner and K. V. Sokolovsky
2014, A&A, 571, 54
19. *Search for very high energy gamma-rays from the $z = 0.896$ quasar 4C +55.17 with the MAGIC telescopes*,
Aleksić, J., et al., MAGIC collaboration
(Corresponding authors: J. Sitarek, H. Takami, A. Dominguez, **D. Paneque**)
2014, MNRAS, 440, 530
20. *The First Fermi-LAT Catalog of Sources Above 10 GeV*,
Abdo et al., *Fermi* Collaboration (lead author: **D. Paneque**),
2013, ApJS, 209, 34
21. *The TeV blazar Markarian 421 at the highest spatial resolution*,
Blasi, M. G.; Lico, R.; Giroletti, M.; Orienti, M.; Giovannini, G.; Cotton, W.; Edwards, P. G.; Fuhrmann, L.; Krichbaum, T. P.; Kovalev, Y. Y.; Jorstad, S.; Marscher, A.; Kino, M.; **Paneque, D.**;
Perez-Torres, M. A.; Piner, B. G.; Sokolovsky, K. V.
2013, A&A, 559, 75
22. *Detection of the Cosmic γ -ray Horizon from Multiwavelength Observations of Blazars*,
A. Domínguez, J.D Finke, F. Prada, J.R. Primack, B. Siana, **D. Paneque**,
2013, ApJ, 770, 77
23. *VLBA monitoring of Mrk 421 at 15 GHz and 24 GHz during 2011*,
Lico, R.; Giroletti, M.; Orienti, M.; Giovannini, G.; Cotton, W.; Edwards, P. G.; Fuhrmann, L.; Krichbaum, T. P.; Sokolovsky, K. V.; Kovalev, Y. Y.; Jorstad, S.; Marscher, A.; Kino, M.; **Paneque, D.**;
Perez-Torres, M. A.; Piner, G.
2012, A&A 545 117
24. *Multiwavelength Observations of the Previously Unidentified Blazar RXJ0648.7+1516*,
Aliu E., et al., VERITAS and Fermi-LAT Collaborations (lead authors: A. Furniss and **D. Paneque**),
2011, ApJ, 742, 127
25. *Fermi-LAT observations of Markarian 421: the missing piece of its Spectral Energy Distribution*,
Abdo A.A., et al., Fermi-LAT and MAGIC collaborations (lead author: **D. Paneque**),
2011, ApJ, 736, 131
26. *Spectral Energy Distribution of Markarian 501: Quiescent State Versus Extreme Outburst*
Acciari, V. A, et al., VERITAS, MAGIC and Fermi-LAT collaborations
(publication using data from the observing campaigns organized by **D. Paneque**)
2011, ApJ, 729, 2
27. *Insights Into the High-energy- γ -ray Emission of Markarian 501 from Extensive Multifrequency Observations in the Fermi Era*,
Abdo A.A. et al., Fermi-LAT, MAGIC and VERITAS collaborations (lead author: **D. Paneque**),
2011, ApJ, 727, 129
28. *A Novel Approach in Constraining Electron Spectra in Blazar Jets: The Case of Markarian 421*,
Ushio, Masayoshi; Stawarz, Łukasz; Takahashi, Tadayuki; **Paneque, David**; Madejski, Grzegorz;
Hayashida, Masaaki; Kataoka, Jun; Tanaka, Yasuyuki T.; Tanaka, Takaaki; Ostrowski, Michal
2010, ApJ, 724, 1509

29. *Hints of the existence of Axion-Like-Particles from the γ -ray spectra of cosmological sources*, M. Sanchez-Conde, **D. Paneque**, E. Bloom, F. Prada, A. Dominguez, (lead authors: M. Sanchez-Conde (former PhD student) and **D. Paneque**) 2009, Phys. Rev. D, 79, 123511
30. *Improvement of quantum efficiency of photomultiplier tubes by humidity controlled coatings based on porous polymer structures*, V. Körstgens, C.-C. Hsu, **D. Paneque** et al., 2008, Applied. Phys. Lett. 93, 041916
31. *Variable Very High Energy gamma-ray emission from Markarian 501*, MAGIC collaboration (lead author: **D. Paneque**), 2007, ApJ, 669, 862
32. *A method to measure the mirror reflectivity of a prime focus telescope*, R. Mirzoyan, M. Garczarczyk, J. Hose, & **D. Paneque**, 2007, Astroparticle Physics, 27, 509
33. *A method to enhance the sensitivity of photomultipliers for air Cherenkov telescopes by applying a lacquer that scatters light*, **D. Paneque**, H.J. Gebauer, E. Lorenz, & R. Mirzoyan, 2004, Nucl. Instr. Meth. A, 518, 619-621
34. *A method to enhance the sensitivity of photomultipliers for air Cherenkov telescopes*, **D. Paneque**, H.J. Gebauer, E. Lorenz, K. Mase, R. Mirzoyan, M. Martinez, A. Ostankov, & T. Schweizer, 2003, Nucl. Instr. Meth. A, 504, 109
35. *Ultrafast FADC multiplexer*, R. Mirzoyan, **D. Paneque**, J. Cortina, E. Lorenz, M. Martinez, & A. Ostankov, 2002, IEEE Trans. Nucl. Sci., 49, 2473
36. *The optical calibration of the MAGIC Telescope camera*, T. Schweizer, E. Lorenz, M. Martinez, A. Ostankov, & **D. Paneque**, 2002, IEEE Trans. Nucl. Sci., 49, 2497
37. *Studies of the optical properties of the new hemispherical photomultiplier tubes from Electron Tubes*, **D. Paneque**, M. Martinez, A. Ostankov, P. Jacon, E. Lorenz, R. Mirzoyan, S. Weinfurtner, B. Lub-sandorzhev, & R. Vasiliev, 2001, IEEE Trans. Nucl. Sci., 48, 1215
38. *A study of the new hemispherical 6-dynodes PMT from Electron Tubes*, A. Ostankov, **D. Paneque**, M. Martinez, E. Lorenz, & R. Mirzoyan, 2000, Nucl. Instr. Meth. A, 442, 117

Last updated: August 28th, 2020

Seminars and presentations

Invited Seminars in Universities or research institutions

- *High-Energy Cosmic-Ray studies through multi-messenger observations of blazars*
Max Planck Institute for Plasma Physics, Munich, Germany, February 12, 2020
- *New scientific challenges for CTA from the extreme character of our closest VHE blazars,*
Institute for Cosmic Ray Research, The University of Tokyo, Japan, November 14, 2019
- *The MAGIC of Time & Multi-Messenger studies on the most Extreme Cosmic Sources,*
Institute for Cosmic Ray Research, The University of Tokyo, Japan, November 8, 2019
- *Time & Multi-Messenger Astronomy of the most Extreme Cosmic Sources,*
Max Planck Institut für Physik, Munich, Germany, December 18, 2017
- *The challenge of studying blazars: the crucial role of gamma-ray astronomy,*
Aoyama Gakuin University, Japan, December 12, 2014
- *The challenge of studying blazars: the crucial role of gamma-ray astronomy,*
Institute for Cosmic Ray Research, The University of Tokyo, Japan, November 19, 2014
- *Review of the latest results on gamma-ray astronomy with the Fermi-LAT instrument,*
Max-Planck-Institut fuer Physik, Munich, Germany, April 17, 2012
- *Study of the classical TeV sources Mrk421 and Mrk501 with Fermi,*
Stanford University, Palo Alto, USA, June 3, 2010
- *Study of the classical TeV sources Mrk421 and Mrk501 with Fermi,*
JAXA/ISAS, Tokyo, Japan, May 7, 2010
- *Gamma-Ray Astronomy in the Fermi Era,*
Max-Planck-Institut für Physik, München, Germany, July 28, 2009
- *The Beginning of Gamma-Ray Astronomy with Fermi,*
Instituto de Astrofisica de Andalucia (IAA), Granada, Spain, December 20, 2008
- *The GLAST satellite and its impact on the understanding of high-energy phenomena in the Universe,*
Fermilab, Chicago, USA, May 5, 2008
- *Studying blazars with the Fermi/LAT and the connection to the TeV instruments,*
Universitat Autònoma de Barcelona (UAB.), Barcelona, Spain, September 6, 2007

Invited Talks in International Conferences

- *The challenge of understanding AGNs through extensive multiwavelength observations*
Ninth Fermi international Symposium, Johannesburg, South Africa, April 2020
Postponed to April 2021 because of Covid-19
- *The MAGIC of very-high-energy gamma-ray astronomy*
XVI International Conference on Topics in Astroparticle and Underground Physics (TAUP), Toyama, Japan, September 2019
- *The Extreme character of our closest VHE blazars, Mrk421 and Mrk501*
Extreme19, Padova, Italy, January 2019
- *Unravelling the complex behaviour of our closest very-high-energy gamma-ray blazars, Mrk421 and Mrk501*
Towards a global multi-wavelength network, Cochem, Germany, September 2018

- *The MAGIC Pieces in the Radio Galaxies Puzzle: Fast Flares from IC310 and NGC1275*
Astrophysics and MAGIC (A+M) conference, La Palma, Spain, 26-29 June 2018
- *Indirect dark matter searches with the MAGIC telescopes*
TeV Particle Astrophysics Conference, Geneve, Switzerland, September 2016
- *Mrk421 and Mrk501 as high-energy physics laboratories to study the nature of blazars*
Blazars through Sharp Multi-Wavelength Eyes, Malaga, Spain, May 2016
- *The MAGIC Telescope System: Status and Scientific Highlights*
XIV International Conference on Topics in Astroparticle and Underground Physics (TAUP), Torino, Italy, September 2015
- *Mrk421 and Mrk501 as high-energy physics laboratories to study the nature of blazars*
Relativistic Jets: Creation, Dynamics, and Internal Physics, Krakow, Poland, April 2015
- *The First Fermi-LAT Catalog of Sources Above 10 GeV,*
The annual meeting 2013 of the German Astronomical Society, University of Tübingen, September 2013
- *RXTE and the Extensive Multifrequency Campaigns on Mrk421 and Mrk501 in the Fermi Era,*
16 Years of Discovery with RXTE, Goddard Space Flight Center, USA, March 29, 2012
- *Review of the latest results on gamma-ray astronomy with the Fermi-LAT instrument,*
High Energy Astroparticle Physics (HEAP), Tsukuba, Japan, November 13-15, 2011
- *Indirect Searches for Axion-Like-Particles with Fermi and Imaging Atmospheric Cherenkov Telescopes,*
High Energy Astroparticle Physics (HEAP), Tsukuba, Japan, November 13-15, 2011
- *Review of Gamma-Ray Astronomy (observations),*
12th International Conference on Topics in Astroparticle and Underground Physics (TAUP), Munich, Germany, September 5-9, 2011
- *Study of the classical TeV blazars Mrk421 and Mrk501 with Fermi,*
RXTE Workshop: current programs and recent results, Washington DC, USA, November 5, 2009
- *The Beginning of Gamma-Ray Astronomy with Fermi,*
Kinetic Modeling of Astrophysical Plasmas, Jagiellonian University in Krakow, Poland, October 5 - 9, 2008
- *The MAGIC Telescope; Developments of New Technologies and First Observations,*
Particles and Radiation from Cosmic Accelerators, Chiba University, Japan, March 2 - 4, 2005

Talks in International Conferences

- *The extreme character of our closest VHE blazars, Mrk421 and Mrk501*
High Energy Phenomena in Relativistic Outflows VII (HEPRO VII), Barcelona, Spain, 9-12 July 2019
- *Unravelling the complex behaviour of our closest very-high-energy gamma-ray blazars, Mrk421 and Mrk501*
TeV Particle Astrophysics Conference, Berlin, Germany, 27-31 August 2018
- *Unravelling the complex behaviour of our closest very-high-energy gamma-ray blazars, Mrk421 and Mrk501*
Seventh International Fermi Symposium, Garching, Germany, 15-20 October 2017
- *Mrk421 and Mrk501 as high-energy physics laboratories to study the nature of blazars*
TeV Particle Astrophysics Conference, Geneve, Switzerland, 12-16 September 2016

- *Mrk421 and Mrk501 as high-energy physics laboratories to study the nature of blazars*
Fifth International Fermi Symposium, Nagoya, Japan, 20-24 October 2014
- *The First Fermi-LAT Catalog of Sources Above 10 GeV*,
Fourth International Fermi Symposium, Monterey, California, October 28 - November 02, 2012
- *The First Fermi-LAT Catalog of Sources Above 10 GeV*,
5th International Symposium on High-Energy Gamma-Ray Astronomy, June 9-13, Heidelberg, Germany, 2012
- *Extensive multi-frequency campaigns on the classical TeV blazars Mrk421 and Mrk501 in the Fermi era*,
25th Texas Symposium on Relativistic Astrophysics, Heidelberg, Germany, December 6-10, 2010
- *Extensive multifrequency campaigns on the classical TeV blazars Mrk421 and Mrk501 in the Fermi era*,
38th Assembly of the COSPAR, Bremen, Germany, July 18 - 25, 2010
- *Fermi view of the classical TeV high Peaked BL Lacs*,
TeV Particle Astrophysics, Menlo Park, California, July 13 - 17, 2009
- *Study of indirect detection of Axion-Like-Particles with the Fermi-LAT instrument and Imaging Atmospheric Cherenkov Telescopes*,
TeV Particle Astrophysics, Menlo Park, California, July 13 - 17, 2009
- *Fermi view of the classical TeV high Peaked BL Lacs*,
Accretion and Ejection in AGNs, Como, Italy, June 22- 27, 2009
- *Study of indirect detection of Axion-Like-Particles with the Fermi-LAT instrument and Imaging Atmospheric Cherenkov Telescopes*,
American Physical Society (APS), Denver, Colorado, May 2 - 5, 2009
- *Search for Axion Dark Matter with GLAST*,
UCLA Dark Matter Symposium, Marina del Rey, California, Feb 20 - 22, 2008
- *Prospects of GLAST to study blazars*,
TeV Particle Astrophysics, Venice, Italy. August 27 - 31, 2007
- *Study of the Flux and Spectral Variations in the VHE Emission from the Blazar Markarian 501, with the MAGIC Telescope*,
1st GLAST symposium, Stanford, California, February 5 - 8, 2007
- *Observation of γ -ray emission above 200 GeV from the AGN 1ES1959+650 during low x-ray and optical activity*,
29th International Cosmic Ray Conference, Pune, India, August 3 - 10, 2005
- *Calibration of the pixel chain in the MAGIC Telescope*,
Deutsche Physikalische Gesellschaft, Berlin, Germany, March 4 - 11, 2005
- *Analyzing sub-100 GeV showers with the MAGIC Telescope*,
Deutsche Physikalische Gesellschaft, Berlin, Germany, March 4 - 11, 2005
- *Performance of the Optical Link System used in the MAGIC Telescope to transmit the PMT Analogue Signals*,
Deutsche Physikalische Gesellschaft, Mainz, Germany, March 29 - April 1, 2004
- *Enhancement in the sensitivity of photomultipliers for air cherenkov telescopes*,
29th Reunión Bienal de la Real Sociedad Española de Física, Madrid, Spain, July 7 - 11, 2003

- *Enhancement in the sensitivity of photomultipliers for air cherenkov telescopes*, Deutsche Physikalische Gesellschaft, Aachen, Germany, March 10 - 13, 2003
- *First studies for a multiplexed GHz FADC prototype for future Air Cherenkov Telescopes*, Deutsche Physikalische Gesellschaft, Aachen, Germany, March 10 - 13, 2003
- *A Method to Enhance the Sensitivity of Photomultipliers for Air Cherenkov Telescopes*, New developments in photodetection, Beaune, France, June 17 - 21, 2002
- *An Optical Properties Study of the New Hemispherical PMTs from Electron Tubes*, IEEE Nuclear Science Symposium and Medical Imaging Conference, Lyon, France, October 15 - 20, 2000

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SHORT (1 page) SUMMARY OF MAIN TECHNICAL AND SCIENTIFIC ACHIEVEMENTS

The main research activities, since I finished my university studies in July 1998, are mostly related to the the MAGIC Telescope and the *Fermi* Satellite. In this page I list and briefly describe some of the main technical and/or scientific achievements.

1) Characterization of the optical properties of a new kind of hemispherical windowed PMT from *Electron Tubes (ET9116A/ET9117A)*, which were the photodetectors chosen for the camera of the first MAGIC telescope

2) The discovery of a method to enhance the detection efficiency of the PMTs *ET9116A/ET9117A* using a special coating with a lacquer that scatters light (NIM A 504: 109-115, 2003, NIM A 518: 619-621, 2004, Applied. Phys. Lett. 93, 041916, 2008). The overall improvement in the detection efficiency of MAGIC was estimated to be $19 \pm 2\%$, which would have been much more expensive to achieve by other (more conventional) means.

3) Construction of an optical system to transfer with minimal distortion and attenuation the short (≤ 3 ns FWHM) analogue PMT signals from the camera of the telescope to the acquisition building, that is located ~ 100 m away from the telescope. This work was done in collaboration with scientific personnel from Max-Planck-Institut für Physik, München.

4) Extraction of the first significant gamma-ray signals obtained with the MAGIC Telescope. The sources (Crab Nebula and Mrk421) were observed during the commissioning phase in February 2004.

5) I proposed the observations, performed the data analysis and interpretation of the results, and finally wrote the manuscript reporting the MAGIC observations of Mrk501 in 2005 (ApJ 669, 862-883, 2007). This was the first time that flux-doubling times as short as 2 minutes were observed from any AGN source, which constrained the size of the emitting region to be comparable to the black hole horizon. I also observed a small delay between the highest and the lowest MAGIC energies, which enabled to put constraints on Lorentz Invariance violation.

6) Characterization of the particle beam profiles in the beam test runs taken in the SPS accelerator (CERN) on spare towers from the LAT instrument. I went to CERN, helped with the set up and the retrieval of the beam test data, and performed a comparison of the experimental data with the Monte-Carlo simulated data, which helped improving the description of the LAT detector in the simulation. I also performed a validation of the GEANT 4 simulations of electromagnetic showers using the simulation package EGS5.

7) Development of a code package (in C++) to retrieve and compute low/high level parameters that provide a diagnosis of the performance of *Fermi*-LAT. This code is one of the essential pieces in the automated procedures used to constantly monitor the performance of the *Fermi*-LAT detector in space.

8) A realistic study of the prospect to indirectly detect Axion-Like-Particles (ALP) with *Fermi* and Cherenkov Telescopes. This work was published on Physical Review D 79, 123511 (2009).

9) I started a project that used the highest *Fermi*-LAT energies and the all-sky monitoring capabilities of *Fermi* to improve the efficiency in the search for new very-high-energy (VHE) objects with Cherenkov Telescopes. I produced a list of good VHE-source-candidates that were (at least some of them) observed later on with the major Cherenkov Telescopes (i.e. H.E.S.S., MAGIC and VERITAS). In only 3 years, 10 out of 24 targets from the list were detected at VHE, which increased the total number of known VHE sources by about 25%. Ultimately, this project evolved towards the first high energy LAT catalog (1FHL, published in 2013), making the path for two additional high-energy *Fermi*-LAT catalogs, 2FHL and 3FHL.

10) Organization of extensive observing campaigns on the VHE objects Mrk421 and Mrk501. This is an unprecedented multi-year and multi-instrument project that started in 2009, and has continued since then. These campaigns are the longer/denser on any VHE object, and provide the best energy and temporal coverage to date. The underlying goal is to use these sources as laboratories to study the high energy emission in blazars, and become a pathfinder to the studies that will be done in a few years with CTA. These multi-instrument data have produced more than 25 scientific publications (18 of them with TeV γ -ray data) to date, with a large fraction of them being led by myself (see above).