

Curriculum Vitae et Studiorum

FIorenza DONATO

Fiorenza Donato

Physics Department, Università di Torino

via P. Giuria 1 - 10125 Torino, Italy

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Degree in Physics: University of Torino, Italy – March 2, 1995 – 110/110 magna cum laude

Ph.D. in Physics: 1996 – 1998, University of Torino, Italy

Current position: Associate Professor in Theoretical Physics at Torino University

Academic Qualifications:

2013: Italian *Habilitation to full professor* position in Theoretical Physics

2002: French *Habilitation à Diriger des Recherches*, Université de Savoie

Awards:

2015: Awarded as Fellow of the **American Physics Society**, Department of Astrophysics
For extensive ground breaking contributions in astro particle physics and indirect dark matter searches.

1995: Awarded "Premio Optime" from the Industrial Union in Torino for the best graduates of the Torino University and Politecnico

Elected Italian representative of the **IUPAP** Astroparticle Physics Committee, 2018-2020.

Fellowships

2004-2005: Alexander von Humboldt fellow at Max Planck Institute for Physics, Munich

2004-2005: Research associate at INFN, Torino

2002-2004: Research associate at Dip. di Fisica Teorica, Univ. of Torino

2001: Chercheur associé CNRS

1999-2001: Research Fellowship by INFN at LAPTH (France)

1999: Research Fellowship by IN2P3 at LAPTH (France)

1998-1999: Research Fellowship by MIUR at LAPTH (France)

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Memberships:

2015: American Physics Society Member

2008 - present: COSPAR (Committee on Space Research) associate

1996 - present: Associate member of *Istituto Nazionale di Fisica Nucleare* (I.N.F.N.)

Research papers: more than 100 papers, almost 6000 citations (Inspire database) - (*see Appendix 1 for extended list*)

h-index 43 (inspire database)

International journals referee:

Physical Review Letters, Physical Review D, Physics Letters B, Astronomy & Astrophysics, The Astrophysical Journal, Journal of Cosmology and Astroparticle Physics, Astroparticle Physics, Monthly Notices of the Royal Astronomical Society

Institutional referee:

Scientific Evaluation Panel for the French National Research Agency *ANR* (2015-17);

Marie Curie EU Fellowship program;

Italian Education and Research Ministry;

Several international Space Agencies

Academic and institutional appointments:

2015-present: Member of the Department Research Committee

2015-present: Member of the Department Orientation Committee

2014-2015: Member of the Science School of Torino University

2014-2015: Member of the Department Recruitment Committee

2011-2015: Elected member of the Physics Department Board

2009-present: Co-responsible of the Master Degree in Theoretical Physics

2009-2013: Member of the Master Didactic Committee

2008-2012: Faculty elected delegate

2008-2011: Seminars coordinator and INFN seminar funds administrator,

2005-2008: Coordinator of the didactic tutorship program for the Physics Degree

Organization of International Conferences:

2019: Scientific Organizing Committee for the WIN2019. The 27th International Workshop on Weak Interactions and Neutrinos, Bari, June 2019

2018: Scientific Organizing Committee for the 8th Fermi Symposium, Baltimore, USA, October 2018

2018: Scientific Organizing Committee of the Workshop New frontiers in Theoretical Physics, Cortona, Italy, May 2018

2017: Convener of the 2nd edition of Non perturbative QCD workshop, NPQCD2017, Pollenzo, May 2017

2017: *Founder and chair* of the Workshop XSCRC *Cross sections for cosmic rays at Cern*, Cern, March 2017

2017: Scientific Program Committee for the International Cosmic Ray Conference ICRC2017 Gamma rays division, Busan, South Korea

2015: Scientific Organizing Committee of the International conference TAUP 2015, Torino, September 2015

2015: Scientific Program Committee for the International Cosmic Ray Conference ICRC 2015, Cosmic Rays Division, The Hague

2015: *Chair and organizer* of the workshop *The p-He cross section measurement: a physics case from cosmic rays*, Torino

2014: Scientific Organizing Committee of the International PhD School ISAPP (International School of Astroparticle Physics) 2014, Belgirate

2014: Convener of the *Messengers of the Universe* session at the Neutrino Oscillation Workshop, NOW2014, Conca Specchiulla

2011: Convener of the *Cosmic Rays production and propagation in the Galaxy and Heliosphere* session at the 13th ICATPP Conference on Astroparticle, Particle, Space Physics and Detectors for Physics Applications, Como

2011: Convener of the *Charged cosmic rays - astrophysics and dark matter* session at the TeV Particle Astrophysics Workshop, Stockholm

2010: Convener of the *Production and Propagation of Matter in the Galaxy* at the ICATPP Conference on Cosmic Rays for Particle and Astroparticle Physics, Como

2010: Scientific Organizing Committee of PPC-2010, The fourth international Workshop on the Interconnection between Particle Physics and Cosmology, Turin

2009: Convener of the *Indirect Dark Matter Detection* session at International Conference on Topics in Astroparticle and Underground Physics TAUP, Rome.

2008: Convener of the *Indirect Dark Matter Detection* session at the TeV Particle Astrophysics Workshop, Beijing

More than 100 talks at conferences and seminars (*See Appendix 2 for extended list*)

Selected recent talks and seminars:

2018 *Recent results on antimatter cosmic rays*

Invited plenary talk at AMS days, April 2018, La Palma

2017 *The cosmic rays and the diffuse gamma-ray emission*

Invited plenary talk at Fermi Symposium, Garmish-Partenkirchen, DE, October 19, 2017

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2016 *The future of cosmic ray Astroparticle Physics*
Invited plenary talk at TeVPA Conference, CERN, September 16, 2016

2016: *Dark matter and the cosmic radiation*
Colloquium at Stanford University, April, 2016

2016: *Dark matter and the cosmic radiation: weak signals, great opportunities*
Seminar at Physics Dept., Princeton University, April, 2016

2016: *Antimatter in the Galaxy*
Seminar at Astrophysics Dept., Princeton University, April, 2016

2015: *Interpretation of the AMS-02 data on antimatter*
Seminar at MIT, Boston, 2015

Lectures at international schools:

2019: *Galactic Cosmic Rays and Multimessenger Astronomy* Lectures scheduled at the Galileo Galilei Institute “Theoretical Aspects of Astroparticle Physics, Cosmology and Gravitation”, March 2019

2017: *Propagation of cosmic rays* Lectures at the International School of Astroparticle Physics *ISAPP 2017*, July 2017, The Netherlands

2017: *Gamma rays and dark matter* Lectures at NASA Fermi Summer School, June 2017, Delaware, USA

2013: *Dark matter and Charged cosmic rays* Lecture at the International School of Astroparticle Physics *ISAPP 2013* Djuronaset (Sweden)

2009: *Secondary cosmic rays* Lectures at the School MAPS - Methods of Analysis for Physics in Space, Perugia (Italy)

2006: *Dark Matter Particle Physics*
Lectures at the International School of Astroparticle Physics *ISAPP 2006* Sorrento (Italy)

2003: *Indirect detection of supersymmetric dark matter* Lecture at the International School of Astroparticle Physics *ISAPP 2003* Conca Specchiulla, Otranto (Italy)

2001: *Propagation of galactic cosmic ray nuclei and antiprotons in a diffusion model* Lecture at the International School of Space Science *ISSS L’Aquila* (Italy)

2000: *Dark matter in galactic cosmic rays*, Lecture at the International Summer School *Gran Sasso Summer Institute*, Laboratori Nazionali del Gran Sasso (Italy)

Outreach:

2017: *La materia oscura nell’Universo*, Pint of Science, Torino

2017: *Problemi aperti in fisica astroparticellare*, Scuola di Fisica, Torino

2016: *La materia oscura nell’Universo: facciamo luce!*, Scuola di Fisica, Torino

2016: *La materia oscura nell’Universo*, Bravinricerca, Liceo Scientifico, Bra

2015: *Fare luce sulla materia oscura*, Festival della Scienza, Settimo Torinese

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2015: *The dark matter: From the infinitely small to the infinitely large*, Torino University's Friends Association

2008: *The dark side of our Universe* "Le donne nella scienza", Napoli University (Italy)

2000: *Looking for dark matter in our Universe* Exploratorium, San Francisco, CA (USA)

Grants:

2017: Fondazione CRT, grant "A new dark matter hunting" (PI)

2017: Progetto ASI-INAF n. 2017-14-H.0, grant "Astronomy with charged leptons: the new frontier for Galactic sources" (PI)

2012: Progetto di Ateneo grant "Origin And Detection Of Galactic And Extragalactic Cosmic Rays" (participation)

2012: MIUR-PRIN research grant "Theoretical Astroparticle Physics" (participation)

2009: MIUR-PRIN research grant "Asimmetria Materia- Antimateria, Materia Oscura ed Energia Oscura all'Epoca di LHC" (participation)

Teaching activities

Course load:

2018-2019:

- Course of "Phenomenology of Fundamental Interactions"
- Course of "Physics and the Universe"
- Experimental physics A and B for SUISS (for Strategic Sciences)
- Physics for Mathematics applied to Finance and Insurance

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2013-2014:

- Course of "Phenomenology of Fundamental Interactions"
- Course of "Physics and the Universe"
- Experimental physics A and B for SUISS (for Strategic Sciences)

2012-2013:

- Course of "Phenomenology of Fundamental Interactions"
- Tutoring exercises in Analytical Mechanics and Special Relativity

2011-2012:

- Course of "Phenomenology of Fundamental Interactions"
- Tutoring exercises in Analytical Mechanics and Special Relativity

2010-2011:

- Tutoring exercises in Analytical Mechanics and Special Relativity

2009-2010:

- Course of "Phenomenology of Fundamental Interactions"
- "Modern Physics" for Optics bachelor
- Tutoring exercises in Analytical Mechanics and Special Relativity

2008-2009:

- Course of "Phenomenology of Fundamental Interactions"
- Tutoring exercises of Analytical Mechanics and Special Relativity
- "Modern Physics" for Optics bachelor

2007-2008:

- Course of "Phenomenology of Fundamental Interactions"
- Tutoring exercises for the course of "Mechanics"
- Mathematics Pre-course for working students, evening program

2006-2007:

- Course of "Phenomenology of Fundamental Interactions"
- Tutoring exercises for the course of "Mechanics"
- Mathematics Pre-course for working students, evening program

2004-2005:

- Tutoring exercises in Analytical Mechanics and Special Relativity

2000-2001:

- Tutoring exercises at the IUT (Institut Universitaire de Technologie d'Annecy), Université de Savoie, in Electricity and Electromagnetism

Supervisor of the Laurea Specialistica Thesis of the following students:

Davide Covolo, 2008; Valentina De Romeri, 2010; Francesca Calore, 2010; Ginevra Favole, 2010; Elisa Todarello, 2011; Mattia Di Mauro, 2011; Michele Re Fiorentin, 2012; Stefano Gariazzo, 2012; Valerio Poggio, 2013; Emanuele Giacone, 2014; Silvia Manconi, 2015; Alessandro Loni, 2015; Luca Giunti, 2018; Salvatore De Gaetano, 2018.

Supervisor of 35 Bachelor Thesis

PhD supervisor:

Francesca Calore, Hamburg University (international cotutorship with T. Bringmann) - now permanent researcher at CNRS;

Valentina De Romeri, Valencia University (international cotutorship with M. Hirsch) - now postdoc at IFIC, Valencia;

Mattia Di Mauro, Torino University (international cotutorship with P. Serpico, Grenoble) - PhD thesis elected for the INFN Fubini award - now postdoc at Stanford, USA;

Silvia Manconi, Torino University, 2015-2018

Michael Korsmeier, Torino University (international cotutorship with M. Krämer, Aachen) 2016-2019

PhD jury member:

2019: S. Ammazzalorso, Torino (Italy)

2017: Y. Genolini, LAPTH, Annecy (France)

2017: M. Campigotto, Torino University (Italy)

2016: H. Silverwood, Amsterdam (The Netherlands)

2016: A. Ghelfi, LPSC, Grenoble (France)

2016: V. Bonnivard, LPSC, Grenoble (France)

2013: G. Bernard, LAPTH, Annecy (France)

2013: F. Calore, Hamburg (Germany)

2013: V. De Romeri, Valencia (Spain)

2013: G. Bernard, Annecy (France)

2012: J. Wu, KTH Stockholm (Sweden)

2012: M. Tavakoli, Sissa, Trieste (Italy)

2011: D. Gaggero, Pisa (Italy)

2010: M. Solberg, Trondheim (Norway)

2009: A. Putze, Université J. Fourier, Grenoble (France)

2008: E. Orazi, Tor Vergata University, Rome (Italy)

Panel Member of the jury for the Habilitation à diriger de Recherche:

2018: Celine Combet, CNRS, Grenoble, France

2015: Marco Cirelli, CNRS, Saclay, France

2011: Stefano Gabici, APC Université Paris VII

Panel Member of the Jury of the INFN Fubini Award for PhD thesis in Theoretical Physics 2015;

Panel Member of the Jury of the INFN Fubini Award for PhD thesis in Theoretical Physics 2017

Short summary of my research activity

My research activity places in theoretical astroparticle physics. It focuses on the search for **particle dark matter** signals which can be found both through the direct scattering of these elusive particles with nuclei, or as an exotic component in rare cosmic rays.

I have contributed particularly to the **cosmic antimatter** productions in space. In order to interpret correctly a possible dark matter signal, it is mandatory the precise determination of any possible background to the signal. As a matter of fact, I have worked to the predictions of cosmic antiprotons, antideuterons and positrons also from standard processes in the Galaxy. This computation has required a complex modeling for the propagation of cosmic rays in the Galaxy, proposed firstly in [47] and now adopted as one of the few standards in the literature. The study of a possible signature of dark matter in cosmic **antideuterons**, proposed in the seminal paper [52] and refined in [26], has been taken as the physics case for the proposal of the GAPS experiment. GAPS experiment has been *approved* by NASA, and its first scientific flight is scheduled from Antarctica in 2020-21.

Since 2012 I started a prominent research activity in the **gamma-ray** physics. The search for elusive dark matter signatures has directly motivated a number of papers, as well as the determination of the possible galactic and extragalactic backgrounds. Recently, I have proposed to the collider experimental community the measurement of the proton-helium **cross section** into antiprotons (as well positrons, gamma-rays and antideuterons). The latter is crucial for a non-ambiguous interpretation of the data collected in space, now provided by AMS-02 with a much smaller error than the one brought by lab cross sections. Afterwards, the first data have been collected by the LHCb experiment at Cern.

Appendix 1

Publication List

1. Hadjidakis:2018ifr C. Hadjidakis *et al.*,
A Fixed-Target Programme at the LHC: Physics Case and Projected Performances for Heavy-Ion, Hadron, Spin and Astroparticle Studies
arXiv:1807.00603 [hep-ex]
to be subm. to Phys. Rep.
2. **Multi-messenger constraints to the local emission of cosmic-ray electrons**
S. Manconi, M. Di Mauro and F. Donato
arXiv:1803.01009 [astro-ph.HE]
subm. to JCAP
3. **Production cross sections of cosmic antiprotons in the light of new data from NA61 and LHCb experiments**
M. Korsmeier, F. Donato and M. Di Mauro
arXiv:1802.03030 [astro-ph.HE]
Phys. Rev. D **97**, no.10, 103019 (2018)
4. **Prospects to verify a possible dark matter hint in cosmic antiprotons with antideuterons and antihelium**
M. Korsmeier, F. Donato and N. Fornengo
arXiv:1711.08465 [astro-ph.HE]
Phys. Rev. D **97**, no.10, 103011 (2018)
5. **Deriving the contribution of blazars to the Fermi-LAT Extragalactic γ -ray background at $E > 10$ GeV with efficiency corrections and photon statistics**
M. Di Mauro, S. Manconi, H.-S. Zechlin, M. Ajello, E. Charles and F. Donato
arXiv:1711.03111 [astro-ph.HE]
Astrophys. J. **856**, no. 2, 106 (2018)
6. **Constraining Galactic dark matter with gamma-ray pixel counts statistics**
H.-S. Zechlin, S. Manconi and F. Donato,
arXiv:1710.01506 [astro-ph.HE],
Phys. Rev. D **98**, 083022, (2018)
7. **Prescriptions on antiproton cross section data for precise theoretical antiproton flux predictions**
F. Donato, M. Korsmeier and M. Di Mauro,
arXiv:1704.03663 [astro-ph.HE],
Phys. Rev. D **96**, no. 4, 043007 (2017)
8. **Theoretical interpretation of Pass 8 Fermi-LAT $e^+ + e^-$ data**
M. Di Mauro, S. Manconi, A. Vittino, F. Donato, *et al.*,
arXiv:1703.00460 [astro-ph.HE],
Astrophys. J. **845**, no. 2, 107 (2017)
9. **“Dipole anisotropy in cosmic electrons and positrons: inspection on local sources”**
S. Manconi, M. Di Mauro and F. Donato.

- arXiv:1611.06237 [astro-ph.HE]
DOI:10.1088/1475-7516/2017/01/006
JCAP **1701**, no. 01, 006 (2017)
10. **“Realistic estimation for the detectability of dark matter sub-halos with Fermi-LAT”**
F. Calore, V. De Romeri, M. Di Mauro, F. Donato and F. Marinacci.
arXiv:1611.03503 [astro-ph.HE]
Phys. Rev. D **96**, no. 6, 063009 (2017)
 11. **“Statistical Measurement of the Gamma-ray Source-count Distribution as a Function of Energy”**
H. S. Zechlin, A. Cuoco, F. Donato, N. Fornengo and M. Regis.
arXiv:1605.04256 [astro-ph.HE]
DOI:10.3847/2041-8205/826/2/L31
Astrophys. J. **826**, no. 2, L31 (2016)
 12. **“Unveiling the Gamma-ray Source Count Distribution Below the Fermi Detection Limit with Photon Statistics”**
H. S. Zechlin, A. Cuoco, F. Donato, N. Fornengo and A. Vittino.
arXiv:1512.07190 [astro-ph.HE]
DOI:10.3847/0067-0049/225/2/18
Astrophys. J. Suppl. **225**, no. 2, 18 (2016)
 13. **“Radio detection prospects for a bulge population of millisecond pulsars as suggested by Fermi LAT observations of the inner Galaxy”**
F. Calore, M. Di Mauro, F. Donato, J. W. T. Hessels and C. Weniger.
arXiv:1512.06825 [astro-ph.HE]
DOI:10.3847/0004-637X/827/2/143
Astrophys. J. **827**, no. 2, 143 (2016)
 14. **“Dark matter vs. astrophysics in the interpretation of AMS-02 electron and positron data”**
M. Di Mauro, F. Donato, N. Fornengo and A. Vittino.
arXiv:1507.07001 [astro-ph.HE]
DOI:10.1088/1475-7516/2016/05/031
JCAP **1605**, no. 05, 031 (2016)
 15. **“What Next: White Paper of the INFN-CSN1”**
A. Andreazza *et al.*.
Frascati Phys. Ser. **60**, 1 (2015).
 16. **“Review of the theoretical and experimental status of dark matter identification with cosmic-ray antideuterons”**
T. Aramaki *et al.*.
arXiv:1505.07785 [hep-ph]
DOI:10.1016/j.physrep.2016.01.002
Phys. Rept. **618**, 1 (2016)
 17. **“The Connection Between the Positron Fraction Anomaly and the Spectral Features in Galactic Cosmic-Ray Hadrons”**
N. Tomassetti and F. Donato.
Astrophys. J. **803**, 2, L15 (2015)

18. **“The composition of the Fermi-LAT IGRB intensity: emission from extragalactic point sources and dark matter annihilations”**
M. Di Mauro and F. Donato.
Phys. Rev. D **91**, 123001 (2015)
19. **“What Next: White Paper of the INFN-CSN1”**
A. Andreazza, M. Anselmino, P. Azzi, W. Baldini, R. Barbieri, F. Bedeschi, E. Bertuzzo and C. Biino *et al.*
Frascati Phys. Ser. **60**, 1 (2015).
20. **“New evaluation of the antiproton production cross section for cosmic ray studies”**
M. Di Mauro, F. Donato, A. Goudelis and P. D. Serpico.
Phys. Rev. D **90**, 085017 (2014)
21. **“Fermi-LAT gamma-ray anisotropy and intensity explained by unresolved Radio-Loud Active Galactic Nuclei”**
M. Di Mauro, A. Cuoco, F. Donato and J. M. Siegal-Gaskins.
JCAP **1411**, 021 (2014)
22. **“Diffuse gamma-ray emission from galactic pulsars”**
F. Calore, M. Di Mauro, F. Donato and F. Donato.
Astrophys. J. **796**, 1 (2014)
23. **“Gamma-ray anisotropies from dark matter in the Milky Way: the role of the radial distribution”**
F. Calore, V. De Romeri, M. Di Mauro, F. Donato, J. Herpich, A. V. Macciò and L. Maccione.
Mon. Not. Roy. Astron. Soc. **442**, 1151 (2014)
24. **“Interpretation of AMS-02 electrons and positrons data”**
M. Di Mauro, F. Donato, N. Fornengo, R. Lineros and A. Vittino.
JCAP **1404**, 006 (2014)
25. **“Diffuse γ -ray emission from unresolved BL Lac objects”**
M. Di Mauro, F. Donato, G. Lamanna, D. A. Sanchez and P. D. Serpico.
Astrophys. J. **786**, 129 (2014)
26. **“Diffuse γ -ray emission from misaligned active galactic nuclei”**
M. Di Mauro, F. Calore, F. Donato, M. Ajello and L. Latronico.
Astrophys. J. **780**, 161 (2014)
27. **“Constraining dark matter annihilation with the isotropic γ -ray background: updated limits and future potential”**
T. Bringmann, F. Calore, M. Di Mauro and F. Donato.
Phys. Rev. D **89**, 023012 (2014)
28. **“Secondary Cosmic Ray Nuclei from Supernova Remnants and Constraints to the Propagation Parameters”**
N. Tomassetti and F. Donato
Astron. Astrophys. **544**, A16 (2012)
29. **“Astrophysics of Galactic charged cosmic rays”**
A. Castellina and F. Donato.

- Contribution in the *Book: Planets, Stars and Stellar Systems Vol. 5*, by Oswalt, Terry D.; Gilmore, Gerard, ISBN 978-94-007-5611-3. Springer Science+Business Media Dordrecht, 2013, p. 725; arXiv:1110.2981 [astro-ph.GA]
30. **“Radio data and synchrotron emission in consistent cosmic ray models”**
T. Bringmann, F. Donato and R. A. Lineros.
JCAP **1201**, 049 (2012)
 31. **“Conservative upper limits on WIMP annihilation cross section from Fermi-LAT γ -rays”**
F. Calore, V. De Romeri and F. Donato.
Phys. Rev. D **85**, 023004 (2012)
 32. **“Indirect Dark Matter Detection with Cosmic Antimatter”**
P. Salati, F. Donato and N. Fornengo *“Particle Dark Matter: Observations, Models and Searches”*
Cambridge, UK: Univ. Press (2010) 521-546, 738 p, Ed. G. Bertone
 33. **“p, He, and C to Fe cosmic-ray primary fluxes in diffusion models: Source and transport signatures on fluxes and ratios”**
A. Putze, D. Maurin and F. Donato
Astron. Astrophys. **526**, A101 (2011)
 34. **“Discrepant hardenings’ in cosmic ray spectra: a first estimate of the effects on secondary antiproton and diffuse gamma-ray yields”**
F. Donato and P. D. Serpico
Phys. Rev. D **83**, 023014 (2011)
 35. **“Galactic electrons and positrons at the Earth:new estimate of the primary and secondary fluxes”**
T. Delahaye, J. Laval, R. Lineros, F. Donato and N. Fornengo
Astron. Astrophys. **524**, A51 (2010)
 36. **“Relic neutralinos and the two dark matter candidate events of the CDMS II experiment”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **81**, 107302 (2010)
 37. **“A constant dark matter halo surface density in galaxies”**
Donato, F. and Gentile, G. and Salucci, P. and Frigerio Martins, C. and Wilkinson, M. I. and Gilmore, G. and Grebel, E. K. and Koch, A. and Wyse, R.
MNRAS **397**, 1169 (2009)
 38. **“Constraints on WIMP Dark Matter from the High Energy PAMELA \bar{p}/p data”**
F. Donato, D. Maurin, P. Brun, T. Delahaye and P. Salati
Phys. Rev. Lett. **102**, 071301 (2009)
 39. **“Galactic secondary positron flux at the Earth”**
T. Delahaye, F. Donato, N. Fornengo, J. Laval, R. Lineros, P. Salati and R. Taillet
Astron. Astrophys. **501**, 821 (2009)
 40. **“Interpreting the recent results on direct search for dark matter particles in terms of relic neutralino”**

- A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **78**, 083520 (2008)
41. **“Antideuteron fluxes from dark matter annihilation in diffusion models”**
F. Donato, N. Fornengo and D. Maurin
Phys. Rev. D **78**, 043506 (2008)
42. **“Upper bounds on signals due to WIMP self-annihilation: comments on the case of the synchrotron radiation from the galactic center and the WMAP haze”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **77**, 127301 (2008)
43. **“Positrons from dark matter annihilation in the galactic halo: theoretical uncertainties”**
T. Delahaye, R. Lineros, F. Donato, N. Fornengo and P. Salati
Phys. Rev. D **77**, 063527 (2008)
44. **“Zooming in on light relic neutralinos by direct detection and measurements of galactic antimatter”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **77**, 015002 (2008)
45. **“Additional bounds on the pre Big-Bang-Nucleosynthesis Expansion by means of γ -rays from the Galactic Center”**
F. Donato, N. Fornengo and M. Schelke
JCAP **0703**, 021 (2007)
46. **“Do current WIMP direct measurements constrain light relic neutralinos?”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **72**, 083521 (2005)
47. **“Antiproton fluxes from light neutralinos”**
A. Bottino, F. Donato, N. Fornengo and P. Salati
Phys. Rev. D **72**, 083518 (2005)
48. **“Kaluza-Klein dark matter and galactic antiprotons”**
A. Barrau, P. Salati, G. Servant, F. Donato, J. Grain, D. Maurin and R. Taillet
Phys. Rev. D **72**, 063507 (2005)
49. **“Diffusion coefficient and acceleration spectrum from direct measurements of charged cosmic ray nuclei”**
A. Castellina and F. Donato
Astropart. Phys. **24**, 146 (2005)
50. **“Cores of Dark Matter Halos Correlate with Disk Scale Lengths”**
F. Donato, G. Gentile and P. Salucci
Mon.Not.Roy.Astron.Soc. **353**, L17-L22 (2004)
51. **“Indirect signals from light neutralinos in supersymmetric models without gaugino mass unification”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **70**, 015005 (2004)

52. **“Light neutralinos and WIMP direct searches”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **69**, 037302 (2004) [arXiv:hep-ph/0307303]
53. **“Antiprotons in cosmic rays from neutralino annihilation”**
F. Donato, N. Fornengo, D. Maurin and P. Salati
Phys. Rev. D **69**, 063501 (2004)
54. **“Lower bound on the neutralino mass from new data on CMB and implications for relic neutralinos”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **68**, 043506 (2003)
55. **“Galactic cosmic ray nuclei as a tool for astroparticle physics”**
D. Maurin, R. Taillet, F. Donato, P. Salati, A. Barrau and G. Boudoul
Research Signposts, “Recent Research Developments in Astrophysics” [arXiv:astro-ph/0212111]
56. **“Antideuterons as a probe of primordial black holes”**
A. Barrau, G. Boudoul, F. Donato, D. Maurin, P. Salati, I. Stefanon and R. Taillet
Astron. Astrophys. **398**, 403 (2003)
57. **“New results on source and diffusion spectral features of Galactic cosmic rays: I- B/C ratio”**
D. Maurin, R. Taillet and F. Donato
Astron. Astrophys. **394**, 1039 (2002)
58. **“Antiprotons from primordial black holes”**
A. Barrau, G. Boudoul, F. Donato, D. Maurin, P. Salati and R. Taillet
Astron. Astrophys. **388**, 676 (2002)
59. **“Size of the neutralino nucleon cross-section in the light of a new determination of the pion nucleon sigma term”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Astropart. Phys. **18**, 205 (2002)
60. **“ β -Radioactive Cosmic Rays in a diffusion model: test for a local bubble?”**
F. Donato, D. Maurin and R. Taillet
Astron. Astrophys. **381**, 539 (2002)
61. **“Antiprotons from spallation of cosmic rays on interstellar matter”**
F. Donato, D. Maurin, P. Salati, A. Barrau, G. Boudoul and R. Taillet
Astrophys. J. **536**, 172 (2001)
62. **“Cosmic Rays below $Z=30$ in a diffusion model: new constraints on propagation parameters”**
D. Maurin, F. Donato, R. Taillet and P. Salati
Astrophys. J. **555**, 585 (2001)
63. **“Probing the supersymmetric parameter space by WIMP direct detection”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **63**, 125003 (2001)
64. **“Further investigation of a relic neutralino as a possible origin of an annual-modulation effect in WIMP direct search”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **62**, 056006 (2000)

65. **“SUSY Higgs at the LHC: Effects of light charginos and neutralinos”**
G. Belanger, F. Boudjema, F. Donato, R. Godbole and S. Rosier-Lees
Nucl. Phys. B **581**, 3 (2000)
66. **“Implications for relic neutralinos of the theoretical uncertainties in the neutralino nucleon cross-section”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Astropart. Phys. **13**, 215 (2000)
67. **“Antideuterons as a signature of supersymmetric dark matter”**
F. Donato, N. Fornengo and P. Salati
Phys. Rev. D **62**, 043003 (2000)
68. **“Extending the DAMA annual-modulation region by inclusion of the uncertainties in astrophysical velocities”**
P. Belli, R. Bernabei, A. Bottino, F. Donato, N. Fornengo, D. Prospero and S. Scopel
Phys. Rev. D **61**, 023512 (2000)
69. **“Combining the data of annual modulation effect in WIMP direct detection with measurements of WIMP indirect searches”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Astropart. Phys. **10**, 203 (1999)
70. **“Neutralino properties in the light of a further indication of an annual modulation effect in WIMP direct search”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **59**, 095003 (1999)
71. **“Compatibility of the new DAMA/NaI data on an annual modulation effect in WIMP direct search with a relic neutralino in supergravity schemes”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Rev. D **59**, 095004 (1999)
72. **“Which fraction of the measured cosmic ray antiprotons might be due to neutralino annihilation in the galactic halo?”**
A. Bottino, F. Donato, N. Fornengo and P. Salati
Phys. Rev. D **58**, 123503 (1998)
73. **“Effects of galactic dark halo rotation on WIMP direct detection”**
F. Donato, N. Fornengo and S. Scopel
Astropart. Phys. **9**, 247 (1998)
74. **“Extending a previous analysis on a possible modulation effect in WIMP direct search”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
arXiv:hep-ph/9710295
75. **“Pinning down neutralino properties from a possible modulation signal in WIMP direct search”**
A. Bottino, F. Donato, N. Fornengo and S. Scopel
Phys. Lett. B **423**, 109 (1998)
76. **“Exploring the supersymmetric parameter space by direct search for WIMPs”**
A. Bottino, F. Donato, G. Mignola, S. Scopel, P. Belli and A. Incicchitti
Phys. Lett. B **402**, 113 (1997)

Appendix 2

Talks at Workshops and Conferences, and Seminars:

1. Dark matter in the Galaxy Seminar at Queen Mary University of London, February 28, 2019
2. Dark matter in the Galaxy Seminar at Southampton University, March 1, 2019
3. Galactic Cosmic Rays Anomalies NOW 2018 - Ostuni, September 12, 2018
4. Secondary nuclei in the Galaxy Invited talk at Rencontres du Vietnam - Very High Energy Phenomena in the Universe Qui Nhon, August 14, 2018
5. The power of γ -rays in the Fermi-*LAT* sky
Invited review talk at ASI-INFN, June 2018
6. Understanding hadronic cross sections for cosmic ray physics
Invited plenary talk at ISVHECRI, Nagoya, Japan, May 22, 2018
7. Recent results on antimatter cosmic rays
Invited plenary talk at AMS days, La Palma, Aprile 13, 2017
8. Cross sections measurements and cosmic antimatter
Invited Cross Talk, CERN, Geneva, December 14, 2017
9. GAPS and the search for cosmic antideuterons
Invited plenary talk at GAPS Collaboration Meeting, San Diego, USA, November 17, 2017
10. Dark matter in the Galaxy
Seminar at the Niels Bohr Institute, Copenhagen, October 30, 2017
11. Cosmic rays and the diffuse gamma-ray emission
Invited review talk at the 7th Fermi Symposium, Garmish, Germany, October 19, 2017
12. *Need for antiparticle production cross sections for interpretation of cosmic-ray data*
Invited talk at NA61/Shine Beyond 2020 Workshop, University of Geneva, July 27, 2017
13. *Dark Matter in the Galaxy*
Seminar at Florence University, April 28, 2017
14. *Cosmic ray astroparticle physics: current status and future perspectives*
Invited plenary talk at the 331 International Astronomical Unit Symposium on SN 1987A, 30 years later La Reunion, France, February 23, 2017
15. *Production cross sections for cosmic ray physics in space*
Invited plenary talk at the Workshop on LHCb Heavy Ion and Fixed Target physics CERN, January 9, 2017
16. *Antimatter in the Galaxy: Open problems for fundamental physics*
Seminar at Gran Sasso Science Institute, November 23, 2016
17. *The future of cosmic ray astroparticle physics*
Invited plenary talk at TeVPA Conference, CERN, September 16, 2016
18. *PAMELA: open roads for the future*
Invited plenary talk at 10 Years of PAMELA, Frascati, June 15, 2016

19. *Antimatter in the Galaxy: Open problems for fundamental physics*
Seminar at Aachen University, June 9, 2016
20. *Antimatter in the Galaxy*
Seminar at Astrophysics Dept. Princeton University, April 22, 2016
21. *Dark matter and the cosmic radiation: weak signals, great opportunities*
Seminar at Physics Dept. Princeton University, April 19, 2016
Dark matter and the cosmic radiation
Colloquium at Stanford KIPAC, April 14, 2016
22. *Insights on cosmic rays and dark matter in the light of AMS-02 data*
Invited plenary talk at AMS general meeting CERN, March 24, 2016
23. *Cross section data for indirect dark matter searches.*
Seminar at Cern, Compass Workshop, March 22, 2016
24. *Dark matter in the cosmic radiation: weak signals, great opportunities*
Seminar at Amsterdam University, February 22, 2016
25. *Dark matter in cosmic rays: where we stand? which are the challenges?*
Seminar at Technische Universitaet, TUM, Munich, February 1, 2016
26. *Gamma-rays from Milli-second Pulsars: mimicking a dark matter signature?*
Invited plenary talk Gamma Rays and Dark Matter, Austria, December 8, 2015
27. *Interpretation of the AMS-02 data on antimatter*
Seminar at MIT, Boston, November 2, 2015
28. *Cosmic rays, antimatter, dark matter: the need for cross section data*
Invited seminar at INFN Theoretical Physics Committee, Rome, September 21, 2015
29. *Galactic cosmic rays phenomenology: nuclei, antimatter, dark matter*
Invited talk at Non-Perturbative QCD Workshop, Cortona, Italy, April 20, 2015
30. *Cosmic rays, antimatter, dark matter: the need for cross section data*
Invited plenary talk at Compass Analysis Meeting, CERN, April 16, 2015
31. *AMS-02: precision data for fundamental physics and trigger for unexplored realms*
Invited plenary talk at AMS general meeting CERN, February 20, 2015
32. *The dark matter in the gamma-rays*
Seminar at Institut de Physique Théorique CEA/Saclay, February 3, 2015
33. *Galactic cosmic rays: The need for nuclear cross section data. An experiment proposal*
Invited talk at the INFN CSN1, Rome, Italy, January 20, 2015
34. *Anti-matter and new physics in Cosmic Rays*
Invited plenary talk at INFN “What Next on Cosmic Rays” Padova, Italy, December 3, 2014
35. *Anisotropies in the gamma-ray sky*
Talk at Fifth Fermi Symposium, Nagoya, Japan, October 22, 2014
36. *Galactic cosmic rays: The need for nuclear cross section data*
Invited talk at the INFN CSN3, Bari, Italy, September 16, 2014

37. *An explanation to the diffuse gamma-ray emission.*
Invited talk at Astroparticle Physics 2014 - Amsterdam, June 26, 2014
38. *Anisotropies in gamma-rays*
Invited plenary talk at International workshop High-Energy Messengers - KIPC, Chicago, Usa, June 10, 2014
39. *Antideuteron propagation in the Galaxy*
Invited plenary talk at International Workshop Antideuteron 2014 - UCLA, Los Angeles, Usa, June 6, 2014
40. *Phenomenology and Models for Dark Matter*
Seminar at La Sapienza University, Rome, January 20, 2014
41. *Constraining Dark Matter annihilation with the isotropic γ -ray background*
Invited plenary talk GDR Terascale - Annecy-le-Vieux, October 29, 2013
42. *Constraining Dark Matter annihilation with the Fermi-LAT isotropic γ -ray background*
Invited talk at The gamma-ray sky - Minneapolis, USA, October 10, 2013
43. *Dark Matter searches with antimatter*
Invited plenary talk at Workshop on the Future of Dark Matter Astro-Particle Physics: Insights and Perspectives Trieste, ICTP October 8, 2013
44. *Indirect searches for Dark Matter*
Invited plenary talk at TAUP 2013, Asilomar, USA, September 10, 2013
45. *Diffuse γ -rays from misaligned AGN and constraints on galactic Dark Matter*
Talk at RICAP, Rome, May 22, 2013
46. *γ -ray emission from misaligned AGN*
Talk at 4th Fermi Symposium, Monterey, USA, October 31, 2012
47. *Searching for dark matter in the cosmic radiation*
Seminar at Southampton University, UK, March 16, 2012
48. *Conservative upper limits on WIMP annihilation cross section from Fermi-LAT γ -rays*
Talk at the international workshop: TAUP11, Munich, Germany, September 05, 2011
49. *Dark matter in light of recent cosmic ray data*
Invited plenary talk at TeV Particle Astrophysics Conference, Stockholm, Sweden, August 2, 2011
50. *Positrons as Dark Matter probes*
Invited plenary talk at Workshop on Indirect Dark Matter Searches, Hamburg, Germany, June 14, 2011
51. *Dark matter: direct and indirect detection* Invited talk at IFAE2011, Incontri di Fisica delle Alte Energie, Perugia, Italy, April 27, 2011
52. *Cosmic Rays and Dark Matter*
Invited talk at Incontro Nazionale Iniziative di Fisica Astroparticellare, Frascati, Italy, June 22, 2010
53. *Constraints from dark matter searches in cosmic antimatter*
Invited talk at GGI Conference "The Dark Matter Connection: Theory & Experiment", Florence, Italy, May 14, 2010

54. *Cosmic antimatter: is there room for exotic sources?*
Seminar at IFIC, Valencia, Spain, February 26, 2010
55. *Dark matter interpretation of positron and antiproton fluxes*
Invited plenary talk at Workshop: "Cosmic Ray Backgrounds in Dark Matter Searches", Stockholm, January 25, 2010
56. *Cosmic rays propagation: constraints on the propagation parameters and perspectives*
Invited plenary talk at Astroparticle Physics with AMS-02, Pisa, Italy, December 01, 2009
57. *Cosmic antimatter from dark matter annihilation and astrophysical sources*
Seminar at Desy Lab., Hamburg, November 11, 2009
58. *Propagation of cosmic antimatter in the Galaxy*
Invited plenary talk at Theoretical miniWorkshop on Dark Matters, UAM-Madrid September 16, 2009
59. *Cosmic ray propagation models and interpretation of results from recent space experiments*
Invited talk at 12th Marcel Grossmann Meeting On General Relativity, Paris, France, July 12, 2009
60. *Galactic secondary positron flux at the Earth*
Talk at the XXXI international conference: *ICRC*, Lodz, Poland July 07, 2009
61. *Astroparticle Space Research*
Round table talk at Pamela Physics Workshop, Rome, Italy May 10, 2009
62. *Constraints from antiproton data*
Invited plenary talk at Tango In Paris, IAP - Paris, France May 04, 2009
63. *Antideuterons in cosmic rays*
Seminar at Columbia University, USA, July 21, 2008
64. *Propagation of Galactic CRs in diffusion models: matter and antimatter*
Solicited talk at COSPAR 2008, Montreal, Canada, July 18, 2008
65. *The search for dark matter in cosmic rays*
Seminar at Universidad Autonoma, Madrid, March 25, 2008
66. *Dark matter tools*
Invited plenary talk at Tools08, MPI Munich, Germany, July 3, 2008
67. *Dark matter in cosmic rays*
Invited talk at TeV Particle Astrophysics, Venice, Italy, August 28, 2007
68. *Propagation of primary antimatter sources*
Invited plenary talk at SciNeGHE, Frascati, Italy, June 18, 2007
69. *Antideuterons from dark matter annihilation in the galactic halo*
Talk at the XXX international conference: *ICRC*, Merida, Mexico, July 10, 2007
70. *Antideuterons from supersymmetric dark matter*
Talk at the XXX international conference: *ICRC*, Merida, Mexico, July 10, 2007
71. *New Physics in cosmic rays*
Seminar at Fermilab, USA, May 14, 2007

72. *Indirect dark matter detection*
Invited plenary talk at “The Hunt for Dark Matter”, Fermilab, USA, May 11, 2007
73. *Indirect dark matter detection*
Seminar given at LPNHE, Paris, March 29, 2007
74. *Cosmic rays and dark matter signals: which perspectives for AMS?*
Seminar given at AMS Meeting, Pisa, February 27, 2007
75. *Indirect dark Matter Detection*
Seminar given at INFN, Pisa, February 27, 2007
76. *Cosmic rays and exotic physics*
Seminar at Tor Vergata University, Rome, November 10, 2006
77. *Propagation properties from measurements of galactic cosmic rays*
Talk at TAUP 2005, Zaragoza, Spain, September 12, 2005.
78. *Light relic neutralinos and astrophysical issues*
Seminar at Stockholm University, Sweden, June 14, 2005.
79. *Exotic dark matter in space*
Seminar at Bonn University, Germany, June 12, 2005.
80. *Galactic cosmic ray features from future experiments*
Seminar at MPE, Garching, Germany, March 03, 2005.
81. *Correlation between galactic scale-lengths*
Seminar at LAPTH, Annecy-le-Vieux, France, October 20, 2004.
82. *Indirect signals from light neutralinos*
Talk at DESY Theory Workshop, Hamburg, September 29 - October 1st, 2004.
83. *Direct and indirect detection of relic neutralinos*
Invited plenary talk at Magic Collaboration Meeting, Pisa, July 21st, 2004.
84. *Antiprotons and Cosmic Ray Propagation*
Invited plenary talk at the international Conference: *Frontier Science 2004 - Physics and Astrophysics in Space*
Villa Mondragone and LNF, Italy, June, 14-19, 2004
85. *Galactic cosmic rays and the search for new physics*
Colloquium at the Osservatorio Astrofisico di Arcetri, Firenze, Italy, January 15, 2004.
86. *Antimatter and dark matter*
Seminar at the University of Zurich, Switzerland, December 03, 2003
87. *Galactic cosmic rays as a tool for astroparticle physics*
Seminar at the Scuola Normale Superiore, Pisa, Italy, November 20, 2003
88. *Supersymmetric antiprotons in cosmic rays*
Talk at the international workshop: *TAUP 2003*, Seattle, USA, September 5-9, 2003
89. *Stable and radioactive nuclei in a diffusion model*
Talk at the XXVIII international conference: *ICRC*; Tsukuba, Japan, July 31 - August 7, 2003

90. *Relic antiprotons and antideuterons*
Seminar at the Università di Bologna, Italy, March 27, 2003
91. *Source and diffusion spectral features of galactic cosmic rays: B/C ratio*
Seminar at the Università di Bologna, Italy, March 26, 2003
92. *Antimatter in cosmic rays*
Seminar at Max Planck für Physik, München, Germany, June 30, 2003
93. *“Antimatter in cosmic rays: the dark matter – cosmic rays connection”*
Talk at the international workshop: XIV Rencontre de Blois, June 16-22, 2002
94. *“Propagation of galactic cosmic rays and antiprotons in the Galaxy”*
Seminar at the Università degli Studi di Torino
December 10, 2001.
95. *“Antiprotons from spallation of cosmic rays on ISM”*
Talk at the international workshop: *TAUP 2001*; Laboratori Nazionali del Gran Sasso, Italy, September 8-12, 2001.
96. *“Antiprotons from spallation of cosmic rays on interstellar matter”*
Talk at the XXVII international conference: *ICRC*; Hamburg, Germany, August 7-15, 2001.
97. *“Dark matter and cosmic rays”*
Invited plenary talk at the international workshop: *Physics at TeV Colliders*
Les Houches, France, May 29, 2001.
98. *“Cosmic rays and secondary antiprotons”*
Seminar at Dépt. de Physique Théorique, Université de Genève
Geneva, Switzerland, March 30, 2001.
99. *“Dark matter and cosmic rays”*
Seminar at LPMT, Université de Montpellier II; Montpellier, France, March 7, 2001.
100. *“Standard and exotic cosmic rays: recent results and AMS potentials”*
Seminar at CERN, AMS Collaboration Analysis meeting.
CERN, Geneva, November 24, 2000.
101. *“Materia oscura supersimmetrica”*
Talk at the Convegno informale di Fisica Teorica *Cortona 2000*
Cortona, Italy, May 31 - June 3, 2000.
102. *“New calculation of the secondary antiproton flux and possible contribution from neutralino annihilation in the halo”*
Talk at the international conference *DARK MATTER 2000*,
Marina del Rey, Ca, February, 22-24 2000.
103. *“Dark matter signatures in cosmic-ray antideuterons”*
Seminar at LAPP, Annecy-le-Vieux, France, December, 17, 1999.
104. *“Neutralinos as relic particles”*
Talk at the international conference: *COSMO99*, Trieste, September, 28 - October, 2, 1999.
105. *“Antideuterons as a signature of neutralino annihilation in the galactic halo”*
Talk at the international workshop: *TAUP99*, Paris, France, September, 5-9, 1999.

106. “*Antimatter from neutralino annihilation*”
Talk at the international conference: *Particles in Astrophysics and Cosmology: From Theory to Observation* Valencia, Spain, May, 3-8, 1999.
107. “*Antimatter from neutralino annihilation*”
Talk at the international workshop: *Tools for Susy*
Lyon, France, March, 31 - April, 2, 1999.
108. “*Antiprotons from neutralino annihilation*”
Talk at: *Rencontre des Particules*
LAPP, Annecy-le-Vieux, France, January, 13-15, 1999.
109. “*Cosmic-ray antiprotons from neutralino annihilation in the halo*”
Talk at the international conference: *IDM98*
Buxton, England, September, 7-11, 1998.
110. “*Neutralino dark matter: a possible signature from low-energy antiprotons*”
Talk at the international conference: *From the Planck scale to the electroweak scale*
Kazimierz, Poland, May 24-29, 1998.
111. “*Signals from supersymmetric dark matter*”
Seminar at SISSA, Trieste, Italy, April 28, 1998.
112. “*Neutralino properties from a possible modulation signal in WIMP direct search*”
Talk at the international workshop: *TAUP97*
Laboratori Nazionali del Gran Sasso, Italy, September 7-11, 1997.