

Marco Padovani – CURRICULUM VITAE

Name	Marco Padovani
Nationality	Italian
Place and date of birth	Pescia (PT) - Italy, June, 7 th 1977
Address	INAF–Osservatorio Astrofisico di Arcetri Largo E. Fermi, 5 50125 - Firenze, Italy Tel.: +39 055 2752 312 email: padovani@arcetri.astro.it

Current position

since November 2016: Marie-Curie Fellowship “AstroFIIt2” at INAF–Osservatorio Astrofisico di Arcetri, Firenze, Italy

Topic: Cosmic Rays, triggers of prebiotic chemistry in the interstellar medium (ORIGIN)

Supervisor: Dr. Daniele Galli

Education

2006: “Laurea” Degree in Physics, Università degli Studi di Firenze, Italy

Thesis title: “*Effetti dei Raggi Cosmici sulla Ionizzazione del Mezzo Interstellare*”.

Supervisor: Dr. Daniele Galli

2010: PhD Degree in Astronomy, Università degli Studi di Firenze, Italy

Thesis title: “*Physical and Chemical Properties of Prestellar Cores*”.

Supervisors: Dr. Daniele Galli and Prof. Malcolm C. Walmsley

Previous Post-Doc positions

1. 01/2010-05/2012

Institut de Ciències de l’Espai (IEEC–CSIC), Universitat Autònoma de Barcelona, Spain

Topic: Theoretical Models and Software Development to Study the Polarised Thermal Emission of Dust

Supervisor: Dr. Josep Miquel Girart

2. 06/2012-02/2014

Laboratoire de Radioastronomie de l’École Normale Supérieure Ulm de Paris, France

Topic: Cosmic-Ray Propagation and Interaction with the Interstellar Medium

Supervisor: Dr. Patrick Hennebelle

3. 03/2014-10/2016

LUPM–Laboratoire Univers et Particules, Université de Montpellier, France

Topic: Cosmic-Ray Acceleration in Protostars

Supervisor: Dr. Alexandre Marcowith

Research Grants and Fellowships

1. 01/2007-04/2008

INAF–Osservatorio Astrofisico di Arcetri

Topic: Effects of Cosmic Rays on Interstellar Matter and Star Formation

2. 05/2008-07/2009
INAF–Osservatorio Astrofisico di Arcetri
Extension of the previous research grant
3. 10/2009
Observatoire de Paris, Meudon, France (three-year fellowship)
Declined
4. 03/2013
Institut de Planétologie et d’Astrophysique de Grenoble, France (two-year fellowship)
Declined
5. 02/2014
AstroFit 2nd call (two-year Marie Curie Fellowship), Italy
Declined
6. 02/2015
Max Planck (three-year fellowship), Garching, Germany
Declined
7. 05/2018
Grant for one-month stay at the Excellence Cluster in Munich, Germany
(collaboration with B. Ercolano & T. Grassi)

Languages

Italian (Native); English, Spanish, Catalan and French (Fluent).

Computer skills

OS: Unix/Linux, Mac Os, Windows

Programming: Python, C, Fortran77, Fortran90, OpenMP, IDL, Super Mongo

Package for MHD simulations: RAMSES

3D rendering and modelling softwares: MayaVi, VisIt, Paraview, PymSES

Data reduction softwares: GILDAS, Miriad, CASA

Conferences

Invited talks

1. 10/2010 *ARTIST: Adaptable Radiative Transfer Innovations for Submillimetre Telescopes*.
“STARFORMAT workshop”, École Normale Supérieure et Observatoire de Paris, France
2. 03/2011 *Cosmic-ray ionisation of molecular clouds*.
“Cosmic-Ray Interactions: Bridging High and Low Energy Astrophysics”, Lorentz Center, Leiden, The Netherlands
3. 04/2012 *Cosmic-ray propagation in molecular clouds: effects of magnetic fields*.
“Sant Cugat Forum for Astrophysics”, Sant Cugat, Spain
4. 09/2012 *ARTIST: Adaptable Radiative Transfer Innovations for Submillimetre Telescopes*.
“Polarization Conference 2012”, ASIAA Taipei, Taiwan
5. 06/2013 *H₂CO and HNC in dark clouds: how theoretical modelling helps in interpreting observations*.
“Processus physico-chimiques d’intérêt astrophysique la chimie de l’azote”, Saint-Florent, France
6. 11/2013 *Effects of magnetic fields on cosmic-ray ionisation*.
“Wind Bubbles, Astrospheres and the Heliosphere: Environments and Cosmic Rays”, Bochum, Germany

7. 06/2016 *Protostars: Forges of cosmic rays?*
"Semaine de l'astrophysique française", Lyon, France
8. 07/2016 *The plasma physics of cosmic rays in star-forming regions*
European Physical Society, 43rd Conference on Plasma Physics, Leuven, Belgium
9. 03/2017 *ARTIST Dust Polarisation Module (DustPol)*
Dust Polarization Workshop, CEA Saclay, France
10. 03/2018 *Protostars: Forges of cosmic rays?*
Astrophysical shocks workshop, Potsdam, Germany
11. 06/2018 *Protostars: Forges of cosmic rays?*
Protoplanetary disks seen through the eyes of new-generation high-resolution instruments, Rome, Italy
12. 06/2018 *Protostars as cosmic-ray factories*
CRISM 2018, Grenoble, France

Contributed talks

1. 07/2009 *CCH in prestellar cores.*
YERAC 2009, Porto, Portugal
2. 06/2010 *ARTIST: Adaptable Radiative Transfer Innovations for Submillimetre Telescopes.*
IAUS 270, Computational Star Formation, Barcelona, Spain
3. 11/2012 *Cosmic rays and molecular cloud chemistry.*
"PCMI Colloque", Paris, France
4. 06/2013 *The role of cosmic rays in protostellar disc formation.*
"Semaine de l'astrophysique française", Montpellier, France
5. 06/2014 *Cosmic-ray interaction with the interstellar medium.*
"Origines Constituants et Evolution de l'Univers", Montpellier, France
6. 06/2014 *The role of cosmic rays on magnetic field diffusion and the formation of protostellar discs.*
CRISM, Montpellier, France
7. 11/2014 *The role of cosmic rays on magnetic field diffusion and the formation of protostellar discs.*
APC Workshop, Paris, France
8. 05/2015 *In-situ particle (re-)acceleration and induced ionisation in protostars*
"Origines Constituants et Evolution de l'Univers", Marseille, France
9. 10/2015 *In-situ particle (re-)acceleration and induced ionisation in protostars*
"From clouds to protoplanetary disks: the astrochemical link", Berlin, Germany
10. 10/2015 *In-situ particle (re-)acceleration and induced ionisation in protostars*
PICS meeting, Arcetri, Italy
11. 04/2016 *Protostars: Forges of cosmic rays?*
"Sant Cugat Forum for Astrophysics", Sant Cugat, Spain
12. 06/2016 *Protostars: Forges of cosmic rays?*
Workshop OCEVU, Toulouse, France
13. 09/2016 *Protostars: Forges of cosmic rays?*
SHOCKS2016 – Interstellar Shocks: Models, Observations & Experiments, Toruń, Poland
14. 12/2016 *Protostars: Forges of cosmic rays?*
CosmiDyn workshop, Montpellier, France
15. 12/2016 *Protostars: Forges of cosmic rays?*
The Hydride Toolbox, Paris, France
16. 06/2017 *Protostars as cosmic-ray factories*
Francesco's Legacy – Star Formation in Space and Time, Firenze, Italy
17. 06/2017 *Protostars as cosmic-ray factories*
EWASS 2017, Prague, Czech Republic

18. 11/2017 *Protostars as cosmic-ray factories*
mm-astronomy workshop, Bologna, Italy

Invited seminars

1. 07/2009 *Cosmic rays and chemistry in prestellar cores.*
Observatoire de Paris-Meudon, France
2. 07/2009 *Cosmic-ray ionisation and chemistry in prestellar cores.*
Service d'Astrophysique, CEA/Saclay, France
3. 07/2009 *Cosmic-ray propagation in molecular clouds.*
Institut d'Astrophysique de Paris, France
4. 08/2009 *Cosmic rays and chemistry in prestellar cores.*
IRAM, Granada, Spain
5. 11/2009 *Cosmic-ray ionisation in prestellar cores.*
Max-Planck-Institut Für Radioastronomie, Bonn, Germany
6. 11/2009 *Cosmic-ray ionisation in prestellar cores.*
Physikalisches Institut, Universität zu Köln, Germany
7. 12/2009 *CCH and nitrogen-bearing molecules in prestellar cores.*
Institut de Ciències de l'Espai (IEEC-CSIC), UAB, Bellaterra, Spain
8. 11/2011 *Cosmic-ray propagation in molecular clouds including the effects of magnetic fields.*
Institut de Planétologie et d'Astrophysique de Grenoble, France
9. 04/2012 *Cosmic-ray propagation in molecular clouds including the effects of magnetic fields.*
Dublin Institute for Advanced Studies, Ireland
10. 12/2013 *Effects of magnetic fields on cosmic-ray ionisation.*
INAF-Osservatorio Astrofisico di Arcetri, Italy
11. 06/2014 *The role of cosmic rays on magnetic field diffusion and the formation of protostellar discs.*
Centre de Recherche Astrophysique de Lyon, France
12. 11/2015 *The manifold roles of cosmic rays in stellar-forming environments.*
Institut für Astrophysik, Wien, Austria
13. 01/2017 *Cosmic Rays and Magnetic Fields: two essential elements in Star Formation.*
Service d'Astrophysique, CEA/Saclay, France
14. 10/2017 *The manifold roles of cosmic rays in star-forming environments.*
Center for Star and Planet Formation, Copenhagen, Denmark
15. 04/2018 *The manifold roles of cosmic rays in star-forming environments.*
I. Physikalisches Institut, Universität zu Köln, Germany
16. 05/2018 *The manifold roles of cosmic rays in star-forming environments.*
Ludwig-Maximilians-Universität Munich, Germany
17. 06/2018 *The manifold roles of cosmic rays in star-forming environments.*
Leiden Observatory, The Netherlands
18. 09/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astronomico di Padova, Italy
19. 11/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astronomico di Capodimonte, Italy
20. 11/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astronomico di Bologna, Italy
21. 12/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astronomico di Roma, Italy

22. 12/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astrofisico di Catania, Italy
23. 12/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astronomico di Palermo, Italy
24. 12/2018 *The role of cosmic rays on physical and chemical processes of the interstellar medium.*
INAF-Osservatorio Astrofisico di Torino, Italy

Teaching experience

1. 09/2016 *The role of cosmic rays on physical and chemical processes of the ISM.*
KROME School 2016, Firenze, Italy
2. 11/2016 *The role of cosmic rays on physical and chemical processes of the ISM.*
Departament de Física Quàntica i Astrofísica, Universitat de Barcelona, Spain
3. 10/2018 *Effects of cosmic rays on circumstellar discs.*
ICCUB School, Barcelona: Protoplanetary Disks in Young Stellar Objects – Institut de Ciències del Cosmos, Universitat de Barcelona, Spain

Poster

1. 05/2008 *Line broadening and non-LTE effects in prestellar cores.*
"The Molecular Universe: an International Meeting on Physics and Chemistry of the Interstellar Medium",
Arcachon, France
2. 08/2009 *CCH in prestellar cores.*
IUPAC 2009, Glasgow, UK
3. 06/2010 *ARTIST: Adaptable Radiative Transfer Innovations for Submillimetre Telescopes.*
IAUS 270, Computational Star Formation, Barcelona, Spain
4. 03/2011 *Cosmic-ray ionisation of molecular clouds.*
Lorentz Center Conference "Cosmic-Ray Interactions: Bridging High and Low Energy Astrophysics", Leiden, The Netherlands
5. 03/2011 *Effects of magnetic fields on cosmic-ray ionisation of molecular clouds.*
Lorentz Center Conference "Cosmic-Ray Interactions: Bridging High and Low Energy Astrophysics", Leiden, The Netherlands
6. 06/2011 *Hydrogen cyanide and isocyanide in prestellar cores.*
IAUS 280, The molecular Universe, Toledo, Spain
7. 10/2013 *Cosmic-ray propagation in the interstellar medium: how theoretical modelling helps in interpreting observations.*
The Universe Explored by Herschel, Noordwijk, The Netherlands

Attended schools and training courses

1. 09/2007 *IRAM Observing School – mm Observing in Times of HERSCHEL.*
Pradollano, Spain
2. 03/2008 *38th Saas-Fee Course: Millimeter Astronomy.*
Les Diablerets, Switzerland
3. 10/2010 *IRAM Interferometry School.*
Grenoble, France
4. 06/2011 *Training School "Astrochemistry with ALMA".*
Bologna, Italy
5. 02/2016 *ALMA Data Handling Workshop.*
Bologna, Italy

Developed Software

DustPol (part of the ARTIST package): code for the computation of the polarised thermal emission of dust in protostars, circumstellar envelopes at (sub-)millimetre wavelengths in order to predict the observed polarisation with ALMA and Planck as well as for the interpretation of existing data obtained with other telescopes (e.g. SCUBA, SMA).

<http://youngstars.nbi.dk/artist/Description.html>

PI of funded projects

1. 2007 RadioNet travel funding for the project 096-07: "The temperature and turbulence in dense cores".
Padovani, M., Galli, D., Walmsley, M., Caselli, P.
2. 2007 RadioNet travel funding for the project 134-07: "The angular momentum evolution of prestellar cores".
Padovani, M., Walmsley, M., Galli, D., Caselli, P., Tafalla, M.
3. 2008 RadioNet travel funding for the project 100-08: "Non LTE effects in C₂H".
Padovani, M., Walmsley, M., Tafalla, M.
4. 2009 RadioNet travel funding for the project 024-09: "C₂H: a new magnetic field probe in molecular dense cores".
Padovani, M., Walmsley, M., Tafalla, M., Galli, D., Thum, C.

Co-PI of funded projects

1. 2015 Programme National Hautes Energies (PNHE), France.
Topic: *Cosmic Rays, Energetic Particles and Their Interaction with Molecular Gas*.
Ceccarelli, C., Padovani, M., Dubus G., Hily-Blant, P., Vaupré S., Montmerle, T., Gabici, S., Krause, J., Dumas, G.
2. 2015 Programme National Physique et Chimie du Milieu Interstellaire (PCMI), France.
Topic: *Study of the Anisotropic Diffusion of Cosmic Rays and Heating of the Interstellar Medium*.
Dubois, Y., Padovani, M., Commerçon, B., Teyssier, R., Hennebelle, P., Rasera, Y., Gonzalez, M.
3. 2017 RadioNet & iALMA funding for the organisation of the conference "Cosmic Rays: the salt of the star formation recipe" to be held in May 2018 in Florence (see Section "Organisation of Scientific Meetings").
Co-PIs: Padovani, M. & Rivilla, V. M.

Major Collaborations

1. Gaia-ESO Survey
2. SKA, "Cosmic Magnetism Science" working group
3. SKA, "Cradle of Life" working group
4. CTA
5. H.E.S.S. (ended in June 2018)
6. e-ASTROGAM

Reviewer

A&A, ApJ, MNRAS, IAUS 270 proceedings, Sant Cugat Forum for Astrophysics proceedings, ASTRA proceedings, CRISM proceedings

Institutional Responsibilities

Member of PhD committee for the Thesis of J. M. Masqué (Universitat de Barcelona, Spain)

Co-Supervisor with A. Marcowith for the PhD Thesis of R. Cohet (Univerisité de Montpellier, France)

Organisation of Scientific Meetings

04/2012 LOC member for the "Sant Cugat Forum for Astrophysics", Barcelona, Spain

05/2018 co-PI member for the conference "Cosmic Rays: the salt of the star formation recipe", Florence, Italy

PI-ship of accepted observational proposals (IRAM-30m, NOEMA, VLT-CRIRES)

1. The temperature and turbulence in dense cores (IRAM-30m, 40h, 2007)
2. The angular momentum evolution of prestellar cores (IRAM-30m, 38h, 2008)
3. Non-LTE effects in CCH (IRAM-30m, 29h, 2008)
4. The abundance of CN, HCN, and HNC in prestellar cores (IRAM-30m, 32h, 2008)
5. CCH: a new magnetic field probe in molecular dense cores (IRAM-30m, 16h, 2009)
6. Understanding the puzzling behaviour of CN in starless cores (IRAM-30m, 29h, 2009)
7. CCH: a new opportunity to measure magnetic field in dense cores (IRAM-30m, 72h, 2010)
8. Testing the new collisional rates for HNC (IRAM-30m, 7h, 2011)
9. Chasing depleting-resistant species in prestellar cores (IRAM-30m, 29h, 2011)
10. The density and magnetic field dependence of the ionisation rate in the Pipe Nebula (VLT-CRIRES, 1.5n, 2011)
11. Chemical characterisation of the massive cores in IRDC G28.53-00.25 (IRAM-30m, 29h, 2012)
12. The density and magnetic field dependence of the ionisation rate in the Pipe Nebula (VLT-CRIRES, 10h, 2012)
13. The shock L1157-B1: a cosmic-ray factory? (NOEMA, 2017)

Co-Investigator of accepted observational proposals (IRAM-30m, SMA, ALMA)

1. Characterizing the morphology of the Pipe Nebula and its cores with MAMBO (IRAM-30m, 40h, 2010)
2. CCH exploratory study towards the magnetised Pipe Nebula Starless Cores (IRAM-30m, 10h, 2011)
3. Interaction of cosmic-rays and molecular clouds (IRAM-30m, 28h, 2011)
4. What is controlling the fragmentation process in intermediate-mass protoclusters? (SMA, 10h, 2011)
5. Filaments, Star Formation and Magnetic Fields (SMA, 116h, 2011)
6. Isotopic fractionation of nitriles in dark gas (IRAM-30m, 30h, 2011)
7. The earliest stages of star and planet formation (ALMA, 2011)
8. 3D magnetic fields and deep chemical survey of young magnetised prestellar cores (IRAM-30m, 73h, 2012)
9. Linking high-energy protons, γ -rays, and ionisation of molecular clouds: the W44 SNR case (IRAM-30m, 42h, 2012)
10. Does the magnetic field regulate the collapse in the massive core G31.41+0.31? (ALMA, 2013)
11. Unveiling the central 1000 AU of a pre-stellar core (ALMA, 2014)

12. W28: an ideal target to study the interaction of cosmic rays and ISM (IRAM-30m, 41h, 2015)
13. Unveiling the disk around the massive protostar powering the magnetized HH 80-81 jet (ALMA, 2015)
14. Does the magnetic field regulate the collapse in the massive core G31.41+0.31? (ALMA, 2015)
15. B-field maps vs jet rotation: the ultimate test of MHD angular momentum extraction (ALMA, 2015)
16. Does the magnetic field regulate the collapse in the massive core G31.41+0.31? (ALMA, 2017)
17. B-field maps and jet/disk rotation: the ultimate test of MHD angular momentum extraction (ALMA, 2017)

Observational experience

IRAM-30m, Granada, Spain: ABCD, EMIR, HERA (heterodyne receivers); MAMBO (bolometer); XPOL (polarimeter)

VLT-CRIRES, ESO, Chile

Peer-reviewed publications

1. Cosmic-ray ionization of molecular clouds
Padovani, M., Galli, D., Glassgold, A. E., 2009, A&A, 501, 619
<http://adsabs.harvard.edu/abs/2009A%26A...501..619P>
2. CCH in prestellar cores
Padovani, M., Walmsley, C. M., Tafalla, M., Galli, D., Müller, H. S. P., 2009, A&A, 505, 1199
<http://adsabs.harvard.edu/abs/2009A%26A...505..1199P>
3. Effects of magnetic fields on the cosmic-ray ionization of molecular cloud cores
Padovani, M., Galli, D. 2011, A&A, 530, 109
<http://adsabs.harvard.edu/abs/2011A%26A...530A..109P>
4. Hydrogen cyanide and isocyanide in prestellar cores
Padovani, M., Walmsley, C. M., Tafalla, M., Hily-Blant, P., Pineau Des Forêts, G., 2011, A&A, 534, 77
<http://adsabs.harvard.edu/abs/2011A%26A...534A..77P>
5. Adaptable radiative transfer innovations for submillimetre telescopes (ARTIST). Dust polarisation module (DustPol)
Padovani, M., Brinch, C., Girart, J. M., Jørgensen, J. K., Frau, P., Hennebelle, P., Kuiper, R., Vlemmings, W. H. T., Bertoldi, F., Hogerheijde, M., Juhasz, A., Schaaf, R. 2012, A&A, 543, 16
<http://adsabs.harvard.edu/abs/2012A%26A...543A..16P>
6. Cosmic-Ray and X-Ray Heating of Interstellar Clouds and Protoplanetary Disks
Glassgold, A. E., Galli, D., **Padovani, M.**, 2012, ApJ, 756, 157
<http://adsabs.harvard.edu/abs/2012ApJ...756..157G>
7. Young Starless Cores Embedded in the Magnetically Dominated Pipe Nebula. II. Extended Data Set
Frau, P., Girart, J. M., Beltrán, M. T., **Padovani, M.**, Busquet, G., Morata, O., Masqué, J. M., Alves, F. O., Sánchez-Monge, Á., Franco, G. A. P., Estalella, R., 2012, ApJ, 759, 3
<http://adsabs.harvard.edu/abs/2012ApJ...759....3F>
8. Cosmic-ray ionization of molecular clouds (Corrigendum)
Padovani, M., Galli, D., Glassgold, A. E., 2013, A&A, 549, 3
<http://adsabs.harvard.edu/abs/2013A%26A...549C...3P>
9. The CN/C15N isotopic ratio towards dark clouds
Hily-Blant, P., Pineau des Forêts, G., Faure, A., Le Gal, R., **Padovani, M.**, A&A, 557, 65
<http://adsabs.harvard.edu/abs/2013A%26A...557A..65H>
10. Cosmic-ray ionisation in collapsing clouds
Padovani, M., Hennebelle P., Galli, D., 2013, A&A, 2013, 560, 114
<http://adsabs.harvard.edu/abs/2013A%26A...560A..114P>
11. Herschel Finds Evidence for Stellar Wind Particles in a Protostellar Envelope: Is This What Happened to the Young Sun?
Ceccarelli, C., Dominik, C., López-Sepulcre, A., Kama, M., **Padovani, M.**, Caux, E., Caselli, P., 2014, ApJ, 790, 1
<http://adsabs.harvard.edu/abs/2014ApJ...790L...1C>
12. Magnetic Fields and Massive Star Formation
Zhang, Q., Qiu, K., Girart, J. M., Baobab L.-H., Tang, Y.-W., Koch, P. M., Li, Z.-Y., Keto, E., Ho, P. T. P., Rao, R., Lai, S.-P., Ching, T.-C., Frau, P., Chen, H.-H., Li, H.-B., **Padovani, M.**, Bontemps, S., Csengeri, T., Juárez, C., 2014, ApJ, 792, 116
<http://adsabs.harvard.edu/abs/2014ApJ...792..116Z>
13. The role of cosmic rays on magnetic field diffusion and the formation of protostellar discs
Padovani, M., Galli, D., Hennebelle, P., Commerçon, B., Joos, M., 2014, A&A, 571, 33
<http://adsabs.harvard.edu/abs/2014A%26A...571A..33P>

14. The Importance of the Magnetic Field from an SMA-CSO-combined Sample of Star-forming Regions
Koch, P. M., Tang, Y.-W., Ho, P. T. P., Zhang, Q., Girart, J. M., Chen, H.-R. V., Frau, P., Li, H.-B., Li, Z.-Y., Liu, H.-Y. B., **Padovani, M.**, Qiu, K., Yen, H.-W., Chen, H.-H., Ching, T.-C., Lai, S.-P., Rao, R., 2014, *A&A*, 797, 99
<http://adsabs.harvard.edu/abs/2014ApJ...797...99K>
15. Interstellar Dust Charging in Dense Molecular Clouds: Cosmic Ray Effects
Ivlev, A., **Padovani, M.**, Galli, D. Caselli, P., 2015, *ApJ*, 812, 135
<http://adsabs.harvard.edu/abs/2015ApJ...812...135I>
16. Cosmic-Ray Acceleration in Young Protostars
Padovani, M., Hennebelle, P., Marcowith, A., Ferrière, K., 2015, *A&A*, 582, L13
<http://adsabs.harvard.edu/abs/2015A&A...582L...13P>
17. Protostars: Forges of cosmic rays?
Padovani, M., Marcowith, A., Hennebelle, P., Ferrière, K., 2016, *A&A*, 590, A8
<http://adsabs.harvard.edu/abs/2016A%26A...590A...8P>
18. The plasma physics of cosmic rays in star-forming regions
Padovani, M., Marcowith, A., Hennebelle, P., Ferrière, K., 2017, *PPCF*, 59, 014002
<http://adsabs.harvard.edu/abs/2017PPCF...59a4002P>
19. A correlation between chemistry, polarization, and dust properties in the Pipe nebula starless core FeSt 1-457
Juárez, C., Girart, J. M., Frau, P., Palau, A., Estalella, R., Morata, O., Alves, F. O., Beltrn, M. T. **Padovani, M.**, 2017, *A&A*, 597, 74
<http://adsabs.harvard.edu/abs/2017A%26A...597A...74J>
20. Stellar energetic particle ionization in protoplanetary disks around T Tauri stars
Rab, Ch., Güdel, M., **Padovani, M.**, Kamp, I., Thi, W.-F., Woitke, P., Aresu, G., 2017, *A&A*, 603, 96
<http://adsabs.harvard.edu/abs/2017A%26A...603A...96R>
21. The onset of energetic particle irradiation in Class 0 protostars
Favre, C., López-Sepulcre, A., Ceccarelli, C., Dominik, C., Caselli, P., Caux, E., Fuente, A., Kama, M., Le Bourlot, J., Lefloch, B., Lis, D., Montmerle, T., **Padovani, M.**, Vastel, C., 2017, *A&A*, 608, 82
<http://adsabs.harvard.edu/abs/2017A%26A...608A...82F>
22. Cosmic-ray ionisation in circumstellar discs
Padovani, M., Ivlev, A., Galli, D. Caselli, P., 2018, *A&A*, 614, A111, *in press*
<http://adsabs.harvard.edu/abs/2018A%26A...614A.111P>
23. Resolving the Polarized Dust Emission of the Disk around the Massive Star Powering the HH 80-81 Radio Jet
Girart, J. M., Fernández-López, M., Li, Z.-Y., Yang, H., Estalella, R., Anglada, G., Áñez-López, N., Busquet, G., Carrasco-González, C., Curiel, S., Galván-Madrid, R., Gómez, J. F., de Gregorio-Monsalvo, I., Jiménez-Serra, I., Krasnopolsky, R., Martí, J., Osorio, M., **Padovani, M.**, Rao, R., Rodríguez, L. F., Torrelles, J. M., 2018, *ApJ*, 856, 27
<http://adsabs.harvard.edu/abs/2018ApJ...856L...27G>
24. Magnetic field in a young circumbinary disk
Alves, F. O., Girart, J. M., **Padovani, M.**, Galli, D., Franco, G. A. P., Caselli, P., Vlemmings, W. H. T., Zhang, Q., Wiesemeyer, H., 2018, *A&A*, 616, A56
<http://adsabs.harvard.edu/abs/2018A&26A...616A...56A>
25. Magnetic mirroring and focusing of cosmic rays in dense cores: how strong is the net effect on ionization?
Silsbee, K., Ivlev, A. V., **Padovani, M.**, Caselli, P., 2018, *ApJ*, 863, 188
<http://adsabs.harvard.edu/abs/2018ApJ...863...188S>
26. Protonated carbon dioxide in massive star-forming clumps
Fontani, F., Vagnoli, A., **Padovani, M.**, Colzi, L., Caselli, P., Rivilla, V. M., 2018, *MNRAS*, 481, L79
<http://adsabs.harvard.edu/abs/2018MNRAS.481...79F>

27. Diagnostics of grain growth and settlement from ALMA observations of polarized emission from protoplanetary disks
Bacciotti, F., Girart, J. M., **Padovani, M.**, Podio, L., Paladino, R., Testi, L., Bianchi, E., Galli, D., Codella, C., Coffey, D., 2018, *ApJ*, *accepted*
28. Production of atomic hydrogen by cosmic rays in dark clouds
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