



# Vanesa Mariel Douna

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## Curriculum Vitae

Institution: Instituto de Astronomía y Física del Espacio (IAFE)  
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## Personal Information

ID/Passport: 33402124  
Nationality: Argentina  
Date of Birth: October 28th, 1987  
Personal e-mail: [vanedouna@gmail.com](mailto:vanedouna@gmail.com)

## Education & Degrees

March 2013-present **PhD (Fellow) student of Physics**, *Physics Department, School of Exact and Natural Sciences, University of Buenos Aires (UBA) – Institute of Astronomy and Space Physics, UBA-CONICET*, Buenos Aires, Argentina, CONICET scholarship 2013-2017.  
Supervisors: Dr. Leonardo J. Pellizza and Dr. I. Félix Mirabel

March 2007-March 2013 **Licenciatura en Ciencias Físicas (equivalent to M. Sc. in Physics)**, *Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Average Qualification: 9.46/10.*  
Thesis title: **Stellar mass black holes in the early Universe**. Supervisors: Dr. Leonardo J. Pellizza and Dr. I. Félix Mirabel

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## Fellowships

- April 2013 - April 2018 **PhD CONICET Research Fellow**, *National Research Council*.
- February 2012 - March 2012 **Scholarship Incentive to Scientific Research**, *Argentine Association of Astronomy*.

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## Research Experience

- March 2013-present **PhD (fellow) student at High Energy Astrophysics Group**, *Institute of Astronomy and Space Physics (IAFE)*, Buenos Aires, Argentina, supervisors: Dr. Leonardo J. Pellizza and Dr. I. Félix Mirabel.  
Research Title: *Stellar mass black-holes in the early Universe*
- March 2012-March 2013 **M. Sc. student at High Energy Astrophysics Group**, *Institute of Astronomy and Space Physics (IAFE)*, Buenos Aires, Argentina, supervisors: Dr. Leonardo J. Pellizza and Dr. I. Félix Mirabel.  
Research Title: *Stellar mass black-holes in the early Universe*
- March 2010-March 2012 **Undergraduate collaborator at Center for Advanced Microscopies**, *Physics Department, School of Exact and Natural Sciences, University of Buenos Aires*, Buenos Aires, Argentina, supervisors: Dr. Lía I. Pietrasanta and Dr. Catalina von Bilderling.  
Research title: *Design, fabrication, characterization and implementation of polymeric patterns for the study of cell adhesion*
- July 2004-August 2005 and August 2008-July 2012 **Undergraduate collaborator at Quantitative Remote Sensing Group**, *Institute of Astronomy and Space Physics (IAFE)*, Buenos Aires, Argentina, supervisor: Dr. Haydeé Karszenbaum.  
Research title: *Satellital information and natural resources*

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## Professional Societies

- July 2015-present **Group of Relativistic Astronomy and Radioastronomy(GARRA)**.
- June 2012-present **Argentine Association of Astronomy**.

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## Research Internships

- September 2013 **Topic: Ionization and heating of the intergalactic medium due to energetic jets by a Monte Carlo method (FORTRAN) with cosmological applications on the Re-Ionization of the Universe**, *Supervisor: Dr. Philippe Laurent*, *Astroparticle et Cosmologie, Université Paris VII – Denis Diderot*, Paris, France and *CEA, Saclay, France*, August 31st to September 17th.

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## Publications

- July 2015 **Metallicity dependence of high-mass X-ray binary populations**, *V. Douna, L. Pellizza, I. Mirabel, S. Pedrosa*, 2015, *Astronomy & Astrophysics*, 579, A44.
- March 2012 **C band radiometric response to rainfall events in the subtropical Chaco forest**, *F. Grings, V. Douna, V. Barraza, M. Salvia, H. Karszenbaum, N. Gasparri, P. Ferrazzoli, R. Rahmoune*, 2012, *Geoscience and Remote Sensing Letters (IEEE)*, 9, 2, pp. 209 – 213.

- March 2011 **Estimating flooded area and mean water level using active and passive microwaves: The example of Paraná River Delta floodplain**, *M. Salvia, F. Grings, P. Ferrazzoli, V. Barraza, V. Douna, P. Perna, H. Karszenbaum*, 2011, *Hydrology and Earth System Sciences*, 15, 8, pp. 2679 - 2692.
- March 2010 **The Effect of Rain and Flooding Events on AMSR-E Signatures of La Plata Basin**, *P. Ferrazzoli, R. Rahmoune, F. Moccia, F. Grings, M. Salvia, M. Barber, V. Douna, H. Karszenbaum, A. Soldano, D. Goniadzki, G. Parmuchi, C. Montenegro, P. Kandus, M. Borro*, 2010, *Journal of Selected Topics in Applied Earth Observations and Remote Sensing (IEEE)*, 3, 1, pp. 81 - 90.

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## Proceedings

- September 2012 **Stellar mass black holes in the early Universe**, *V. Douna, L. Pellizza, I.F. Mirabel*, 2012, *Bulletin of the 55th Annual Meeting of the Argentine Association of Astronomy (AAA)*, ISSN 1669-9521 (digital version), ISSN 0571-3285 (printed version), Mar del Plata, Buenos Aires, Argentina, 2012 September 17th to 21st.
- April 2012 **Molecular micropatterns: fabrication and characterization with advanced microscopies**, *C. von Bilderling, M. C. Marchi, V. Douna, C. Prudkin Silva y L. Pietrasanta*, *Acta Microscópica* Special Edition 2nd Argentine Congress on Microscopy, Argentine Association of Microscopy (SAMIC), Ciudad Autónoma de Buenos Aires, Argentina, 2012 April 18th to 20th.
- December 2011 **Protein micropatterns as intelligent surfaces for cell adhesion: design and fabrication with lithography techniques**, *C. Prudkin Silva, V. Douna, C. von Bilderling, M. C. Marchi, L. Pietrasanta*, Summary Book XL Annual Meeting SAB 2011, Argentine Society of Biophysics (SAB), ISBN: 978-987-27591-0-0, p. 233, Ciudad Autónoma de Buenos Aires, Argentina, 2011 December 5th to 7th.
- June 2010 **Monitoring Flooded Area Fraction in Floodplains of Paraná Basin Using Passive And Active Microwave Systems**, *M. Salvia, F. Grings, P. Perna, P. Ferrazzoli, R. Rahmoune, M. Barber, V. Douna, H. Karszenbaum*, *Proceedings of 2010 IEEE International Geoscience & Remote Sensing Symposium (IGARSS 2010)*, p. 142, Honolulu, Hawaii, USA, 2010 June 24th to 29th.
- March 2010 **AMSR Observations of Rain and flood Events over Vegetated Areas of La Plata Basin**, *P. Ferrazzoli, R. Rahmoune, F. Grings, V. Douna, G. Parmuchi, M. Salvia, H. Karszenbaum*, *Proceedings of 11th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment (MicroRad2010)*, p. 63, Washington D.C., USA, 2010 March 1st to 4th.

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## Organization of scientific meetings

- April 2014 **Member of the Local Organizing Comitee of the II Argentinian-Brazilian Meeting on Gravitation, Astrophysics and Cosmology (GrA-Co II)**, *Fundación Cassará, Ciudad Autónoma de Buenos Aires, Argentina*, Organized by the Argentine Institute of Radioastronomy (CONICET) and Universidade do Estado do Rio de Janeiro.  
2014 April 22nd to 25th

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## Participation in conferences and scientific meetings

- March 2014 **Colloquium at the Institute of Astronomy and Space Physics (IAFE)**, *Ciudad Autónoma de Buenos Aires, Argentina*, Title: The Re-Ionization of the Universe, Authors: V.M. Douna, I.F. Mirabel, L.J.Pellizza.  
2014 March 6th
- April 2013 **Colloquium at the Argentine Institute of Radioastronomy (IAR)**, *La Plata, Buenos Aires, Argentina*, Title: Stellar black holes at the dawn of the Universe, Author: V. Douna.  
2013 April 24th
- September 2010 **Poster Presentation at the 95th National Meeting of the Argentinean Physics Association (AFA)**, *Malargue, Mendoza, Argentina*, Title: *Design and fabrication of protein micropatterns by lithography techniques*, Authors: C. Prudkin Silva, V. Douna, C. von Bilderling, M. C. Marchi, L. Pietrasanta.  
2010 September 28th to October 1st

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## Schools & Workshops

- May 2015 **First ICTP Advanced School on Cosmology**, *smr 2729*, Professors: D. Weinberg (Ohio State U.), P. Serpico (LAPTh, Annecy), M. Zaldarriaga (IAS, Princeton), M. Branchesi (Urbino U.), W. Goldberger (Yale), J. Khoury (UPenn), A. Ferrara (SNS, Pisa), B. Partridge (Haverford), R. Rosen (Columbia), B. Jain (UPenn), S. Borgani (Trieste Observatory), The Abdus Salam International Centre for Theoretical Physics (Trieste).  
2015 May 18th to 29th, Trieste, Italy
- June 2014 **Vatican Observatory Summer School 2014 on Astronomy and Astrophysics**, *Galaxies: Near and Far, Young and Old*, Professors: Dr. John Stocke - Chair (University of Colorado, Boulder, CO), Dr. José G. Funes, S.J. - Director (Vatican Observatory, Vaticano), Dr. Guy Consolmagno, S.J. - Dean (Vatican Observatory, Vaticano), Dr. Christopher Carilli (Very Large Array, Socorro, New Mexico, USA), Dr. Michele Trenti (Cambridge University, UK), Dra. Jacqueline van Gorkom (Columbia University, New York, USA), Vatican Observatory.  
2014 June 1st to 27th, Castel Gandolfo, Rome, Italy

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## Courses

- August 2014 - **Title: Cosmology**, Professor: Dr. Gastón Giribet (*CONICET - Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina*), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Comment: this is a one term course following mainly V. Mukhanov's book: *Physical foundations of Cosmology* and S. Weinberg's: *Cosmology*.
- December 2014
- February 2014 - **Title: Laboratory of Electronics**, Professor: Dr. Jorge Aliaga (*CONICET - Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina*), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Comment: this is a summer course following mainly P. Horowitz and W. Hill's book: *The Art of Electronics*.
- March 2014

- March 2013 - **Title: Astrophysics**, Professor: Dr. Daniel Gomez (CONICET - IAFE, Buenos Aires, Argentina), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Comment: this is a one term course following mainly A.R Choudhuri's book: *Astrophysics for Physicists* and E. Battaner's: *Astrophysical fluid dynamics*.
- August 2013
- May 2012 **Title: Phenomenology and physics of high mass X-ray binaries**, Professor: Dr. Sylvain Chaty (Université de Paris VII, France), Place: School of Astronomical and Geophysical Sciences, National University of La Plata, La Plata, Buenos Aires, Argentina, May 28th to June 1st.
- August 2011 - **Title: Topics on Molecular Biophysics**, Professor: Dr. Lía Pietrasanta (CONICET - CMA, Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Comment: this is a one term introductory course for physicists with theoretical and practical contents.
- December 2011
- March 2011 - **Title: Introduction to Field Theory**, Professor: Dr. Gustavo Lozano (CONICET, Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Comment: this is a one term course following mainly W. Greiner and J. Reinhardt's book: *Field Quantization*.
- August 2011
- October 2010 **Title: Topics on Contemporary Cosmology**, Professor: Dr. Matías Zaldarriaga (Institute for Advanced Study, USA), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, 1st to 12th October.  
Visiting Professor Course
- March 2010 - **Title: Introduction to General Relativity**, Professor: Dr. Diego Mazzitelli (CONICET- CNEA, San Carlos de Bariloche, Río Negro, Argentina), Place: Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina, Comment: this is a one term course following mainly J. Hartle's book: *Gravity: An introduction to Einstein's General Relativity*.
- August 2010

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## Teaching Experience

- April 2015 - July 2015 **Graduate Teaching Assistant at University of Buenos Aires**, Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Argentina, Taught in Physics I for Chemists (Mechanics, Optics and Hydrodynamics), Shared responsibility for lectures, exams, homework assignments and grades.  
Competitive selection
- September 2014 - February 2015 **Graduate Teaching Assistant at University of Buenos Aires**, Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Argentina, Taught in Physics II for Biologists and Geologists (Optics and Thermodynamics), Shared responsibility for lectures, exams, homework assignments and grades.  
Competitive selection

- April 2013 - April 2014 **Teaching Assistant at University of Buenos Aires**, *Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Argentina*, Taught in Physics I for Biologists and Geologists (Mechanics and Electromagnetism) and in Laboratory I for Biologists and Geologists (Mechanics and Electromagnetism), Shared responsibility for lectures, exams, homework assignments and grades.  
Competitive selection
- April 2012 - April 2013 **Teaching Assistant at University of Buenos Aires**, *Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Argentina*, Taught in Physics I for Biologists and Geologists (Mechanics and Electromagnetism), Shared responsibility for lectures, exams, homework assignments and grades.  
Competitive selection

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## Outreach Activities

- July 2015 **Talk for university entrants to M. Sc. in Physics**, *Presentation: 'A quick tour through Astronomy and Astrophysics: My daily job as a PhD student'*, Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina.  
General outreach talk in the frame of the tutorships for freshmen in the career of Physics.
- November 2014 **General Public Talk: The Night of the Museums**, *Presentation: 'The Galaxy Zoo Project'- Stand 'Meeting the Cosmos'*, IAFE, CONICET-UBA, Buenos Aires, Argentina.  
The Night of the Museums is a free cultural activity organized by the government of Buenos Aires City for all the citizens, to visit museums, organizations and institutes of the city during one night a year
- November 2013 **General Public Talk: The Night of the Museums**, *Presentation: 'If eyes can't see, a telescope observes'- Stand 'Meeting the Cosmos'*, IAFE, CONICET-UBA, University of Buenos Aires, Buenos Aires, Argentina.  
The Night of the Museums is a free cultural activity organized by the government of Buenos Aires City for all the citizens, to visit museums, organizations and institutes of the city during one night a year
- June 2008 **Volunteer at Physics Week 2008**, *Physics Department, School of Exact and Natural Sciences, University of Buenos Aires, Buenos Aires, Argentina*.  
Physics Week is an activity organized by the Physics Department of the University of Buenos Aires in which Physics students share and explain experiments to high school students from all over the country

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## Languages

- Spanish Native
- English Advanced. First Certificate Exam (2004), University of Cambridge - ESOL Examinations, UK, *Qualification: A*
- French and Portuguese Basic Knowledge

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## Informatic Knowledge

- OS Windows and Linux
- Analysis OriginPro, Wolfram Mathematica (basic level), Matlab (basic level)

Programming Fortran (basic level), C (basic level), Python (basic level)  
Satellital Image ENVI, ERDAS, BEST  
Processing  
Other Tools Microsoft Office, L<sup>A</sup>T<sub>E</sub>X