

VALERIA PETTORINO

PHYSICIST, PHD, HDR

CONTACT INFORMATION

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PROFILE

I am a theoretical cosmologist since 2002, when I graduated in this field.
Research Keywords: dark energy, modified gravity, CMB, LSS, neutrinos.
Project manager within international collaborations, in roles at the interface between theory and data analysis.

QUALIFICATIONS

- Habilitation à Diriger des recherches
FRANCE - 2019 *Université Paris Sud.*
 - Abilitazione Scientifica Nazionale
ITALY - 2017 - 2026
- 02/A2 - THEORETICAL PHYSICS OF
FUNDAMENTAL INTERACTIONS
(Prima e Seconda Fascia)
- 02/C1 - ASTRONOMY, ASTROPHYSICS,
PHYSICS OF EARTH AND PLANETS
(Prima e Seconda Fascia)
- CEA Filière Experte in cosmology, theory
and data interpretation
2018-present

PROFESSIONAL HISTORY

CEA Paris Saclay, France - *Staff Research Scientist*
2016 - Present

2019-present: President of Programme National de Cosmologie et galaxies

2020-present: Member of Conseil Scientifique et Technique DAp

2021-present: Member of the Council of the Graduate School

2021-present: Member of the *cellule communication* for CEA DAp

2018-2019: CEA Representative for CMB Perspectives for CNES

2018: HCERES expert, in charge of Theme 07 *Univers sombre*

University of Heidelberg, Germany - *Group Leader*
2014 - 2019 (ended in 2016)

Lead of ESA *Planck* analysis on dark energy and modified gravity
Co-PI Transregio DFG grant among Heidelberg, Bonn and Munich
German Representative of European CANTATA COST action
Member of Heidelberg Research Council for investments plan

University of Geneva, Switzerland - *Marie Curie Fellow*
2012 - 2014

Research for Euclid & Planck satellites; joined Planck HFI.
Dark Energy, Modified Gravity, Dark Matter & AMS in coll. with CERN

SISSA, Trieste, Italy - *Postdoc*
2010 - 2012

Research for Euclid & Planck satellites; joined Planck LFI.
CMB data analysis & foreground component separation

Columbia Univ. New York, US - *Associate Research Fellow*
2009 - 2010

Simulations and non-linear physics. Communication at the Italian Academy.

Univ. of Heidelberg, Germany - *A. von Humboldt Fellow*
2007 - 2009

Coupled Dark Energy, Growing Neutrinos and non-linear perturbations.
Joined DUNE and worked on forecasts.

Torino / Heidelberg / Valencia - *Postdoc and long visits*
2005 - 2007

EDUCATION

PhD in fundamental and applied physics

Federico II Univ. Naples 2002 - 2005

Graduate studies

Federico II Univ. Naples 1997 - 2002

- 110/110 cum Laude

- ERASMUS exchange in Grenoble

Undergraduate studies

Liceo Scientifico Caro Naples 1992 - 1997

- Intercultura exchange in Cambridge, Ontario, Canada

- 60/60 with mention of the evaluation committee

- Langhe Prize for best marks in the school

LANGUAGES

Italian Native	● ● ● ● ●
English Full Professional	● ● ● ● ●
French Full Professional	● ● ● ● ●
German Intermediate	● ● ● ● ●

AWARDS

- 2020 Marie Curie Alumni Association (MCAA) Career Award
- 2019 Euclid STAR Prize, category TEAM
- 2019 Giuseppe and Vanna Cocconi Prize to WMAP and Planck Collaborations
- 2018 Gruber Prize in Cosmology to Planck Collaboration
- 2018 Marcel Grossman Institutional Award to Planck collaboration
- 2018 Group Award by Royal Society to Planck Collaboration
- 2010, 2014, Best Reviewer for Physics Letters B
- 1995, 3rd place English debating competition in Ontario, Canada
- 1993 Langhe Prize

EXPERT AND JURY MEMBER

European Commission monitor for Horizon 2020
Lindau Alumni Peer Reviewer 2020
Evaluation Committee CEA DPhP 2020
HDR Jury member (FR), 2018
PhD Jury member (CH 2016, 2018, FR 2017, 2019)
CMB Perspectives CNES panel (FR) 2017-2019
HCERES Expert Reviewer (FR) 2018
Referee for Research Council UCL (BE), 2018
Euclid Prize Chair 2017
Evaluator Marie Curie fellowships 2014, 2016, 2017
Panel selection women fellowships (DE) 2016
Research Council Heidelberg, (DE) 2015-2016
Referee for National Science Centre Poland 2014
Evaluation Committee Heidelberg DE 2010
Referee for 9 international journals since 2008

EXPERIMENTAL COLLABORATIONS

Euclid Consortium (former DUNE member) 2007 - present

2019-present: Co-Lead of the *Euclid* Inter-Science Taskforce: Likelihood
2021-present: co-lead of the Euclid Early Career Committee
2021: member of the *Euclid* Builder Committee
2018-present: CEA Representative for *Euclid* France Communication
2015-2020: Co-Lead of the *Euclid* Inter-Science Taskforce: Forecasts
2016-2018: Euclid STAR Prize Committee chair
2017: Organizer of the Euclid Theory Meeting in Paris
2016: Organizer of the Euclid Theory Meeting in Heidelberg
2011-2016: Lead of the Euclid Theory Review
2011-present: Lead of the Euclid Theory forecasts (co-lead since 2018)
2011-2013: Deputy lead of Euclid Communication

Planck collaboration 2009 - 2020

2012-2018: lead of the Dark Energy and Modified Gravity analysis (LFI, HFI)
2009-2012: Foreground Component separation for LFI

ICARUS collaboration 2005 - 2007

Supernova Relic neutrinos

INVITED TALKS (SELECTION)

2021: Madrid, Spain (Virtual)
2021: Waterloo Centre for Astrophysics (Canada, virtual)
2020: YITP Kyoto (Virtual)
2020: Annual Meeting of the German Astronomical Society (Virtual)
2019: Accelerating Universe in the Dark (Kyoto, Japan)
2018: Colloque Dark Energy, IAP Paris, France
2018 Journées SF2A, Bordeaux, France
2017 Colloque Dark Energy Invited Review, LAL Orsay France
2017 Brazilian National Meeting on Particles and Fields, Brazil
2017 Python Italia, Invited keynote speaker
2016 SIGRAV XXII, Cefalù, Italy
2016 Europython, Bilbao, Spain
2016 Euclid Meeting Invited Plenary Talk
2016 COSMO21 Crete
2015 Planck results, Corfù
2015 LMU, Munich, Germany
2015 Off-the-Beaten-Track, ICTP, Trieste, Italy
2015 Perimeter Institute, Canada
2015 Honolulu IAU Meeting, Planck special session, Hawaii
2014 DESY, Germany
2014 PONT, Avignon, France
2013 New Light in Cosmology from the CMB, ICTP, Trieste, Italy
2012 COSMO 2012, Beijing, China
2012 When theory meets simulations, Ringberg Castle, Germany
2009 Princeton, US
2009 MIT, US
2009 Univ Penn, US
2008 LBLN Berkeley, US

COMMUNICATION

I have given invited talks worldwide (~20 in the last 5 years) as expert in my field, on theory, observations and reviews of the state of the art.



I engage in communication for the general public. Press Releases and videos are available on my website. Here is a selection:

- Podcast (Italian) for Youtuber V.Schettini 2021
- Fait marquant CEA IRFU 2021, 2020
- Webinar for school students 2020
- Interview for [Quanta Magazine](#) 2019
- Interview for [Radio France Internationale](#), on the anniversary of Sputnik1 2017
- Invited talk for the 150th anniversary of Italy (2011, Brera)
- Lindau Nobel Laureats Meeting, 2012 (selected among 3 young researchers for an interview for Nature, with Laureats B.Schmidt and J.Mather)
- Consulting for ENSAAMA École d'Arts et Métiers, Paris for a project in metal inspired to cosmology.

RESPONSABILITIES IN OTHER NETWORKS

- DIRE (Donne Italiane Rete Estera - based in Paris, in collaboration with Italian Consulate in Paris). Elected Vice-President in 2020.
- Supernova Foundation - women in physics, leadership team and mentor since 2015
- MCAA: Marie Curie Alumni Association, Science Policy Work Group since 2020.
- EuroPython Society, board member 2018-2019, member since 2017, supporting python programming language in Europe within academia and industry.

SCIENCE DIPLOMACY

I completed training sessions on how science and science policy can be used for evidence-based diplomacy to improve international collaborations.

- Alumna of InsSciDE Warsaw School on Science Diplomacy 2021
- MCAA Science Policy Work Group
- Certified training on Science Diplomacy by S4D4C European ERC Action.
- Training on negotiation and communication.

EVENTS I ORGANISED (SELECTION)

I have organised international conferences, schools, workshops, webinars. Topics include cosmology, space science, theoretical physics, data analysis, career development, education, science diplomacy, transfer of knowledge between academia and industry and in general across different professions. Details and more events are available on [my website](#). Here is a selection:

- **Atelier on Machine Learning, SF2A 2021**
- **Panel on science diplomacy in space exploration**, with Italian Embassy France and PoliTo, hosting S. Di Pippo (UN, former ESA)
- **GOLD, Paris France 2020**, a 10 week programme for researchers, including a school, 3 workshops and tutorial sessions (cancelled).
- **EuroPython 2019**, Basel, Switzerland - 1200 participants from academia and industry.
- **Winter School on Cosmology (2007 - 2021)**: co-funder and organiser for 14 years, inspired to the concept: *theory for observers and observations for theorists*.
- **IDEALS: Investigating Dark Energy At Large Scales, Trieste 2011**, I was in charge of all aspects, from scientific programme to hotel booking

MENTORING

Supernova Foundation, 2015 - present: leading team and mentor; worldwide mentoring and networking programme for women in physics, including about 300 women from 22 countries.

Univ.Paris-Saclay Femmes & Sciences, 2021 - present: mentor.

Mock interviews: I organise job mock interviews for PhD and postdocs.

Tutorial: I prepared a tutorial on tips [to give a talk](#) available on Youtube.

CERTIFIED TRAINING

I value transfer of knowledge and I am continuously seeking training in transferable skills that allow me to improve my skills as scientist and manager, in an international context.

- Warsaw Science Diplomacy School by InsSciDE (2021)
- Science Diplomacy, by S4D4C EU-H2020 (2020)
- Intermediate Machine Learning on Kaggle (2020)
- Convolutional Neural Networks in TensorFlow (2020)
- Introduction to TensorFlow for AI, ML, and DL (2020)
- Managing an Agile Team (2020)
- Data Visualization with Python by IBM (2019)
- Machine Learning by Andrew NG on Coursera (2019)
- Using Databases with Python (2015)
- A Crash Course in Data Science (2015)
- Communication in the 21st Century Workplace (2015)
- Python Data Structures (2015)
- The Art of Negotiation (2015)