

Curriculum Vitae

Provide the following information for all Principal Investigators.
DO NOT EXCEED THREE PAGES.

NAME: Vasiliki Pavlidou

POSITION TITLE: Affiliated Faculty, Institute of Astrophysics, FORTH

Associate Professor, Department of Physics, University of Crete

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	Completion Date MM/YYYY	FIELD OF STUDY
Aristotle University of Thessaloniki, Greece	BSc	6/1999	Physics
University of Illinois at Urbana-Champaign, USA	MS	6/2001	Astronomy
University of Illinois at Urbana-Champaign, USA	PhD	6/2005	Astronomy
Kavli Institute of Cosmological Physics, University of Chicago, USA	Postdoctoral Fellow	8/2008	High-energy Astrophysics and Cosmology
California Institute of Technology	Einstein Fellow	11/2011	High-energy Astrophysics and Radio Astronomy of Blazars
Max-Planck Institute for Radio Astronomy, Bonn, Germany	Visiting Scientist	11/2012	Radio Astronomy of Blazars

NOTE: The CV must not exceed three pages. Follow the format and instructions below.

A. Personal Statement

PI Pavlidou is an expert on optopolarimetry, high-energy astrophysics, and cosmology. She has chaired the RoboPol International Collaboration on optopolarimetric observations since its formation in 2013. She has overseen five observational seasons of RoboPol observations. In the past three years, she has worked intensively in the field of Galactic magnetic field measurements and astrophysical applications, which provides her with a unique expertise and skillset to coordinate MagMASim and the participation of the Institute of Astrophysics in the project.

B. Positions and Honors

- 2018-present Associate Professor
Affiliated Faculty Department of Physics, University of Crete
Institute of Astrophysics, FORTH
- 2013-2018 Assistant Professor Department of Physics, University of Crete
- 2014 Award for Women in Science (Greece) Unesco - L'Oreal
- 2008 Einstein Fellowship NASA
- 2001 Award for Excellence in Teaching U. Illinois
- 2000-2001 Amelia Earhart Fellowship Zonta Foundation
- 1999-2000 Graduate College Fellowship U. Illinois
- 1999-2002 Scholarship for Graduate Studies in Theoretical Physics Greek State Scholarships Foundation

C. 10-year track record

PI Pavlidou has published 101 papers in refereed journals, of which 72 are few-author and 29 are large-collaboration papers. Her papers have received over 12000 citations (source: Google Scholar). She has an h-index of 46.

Full publication list: <https://scholar.google.com/citations?hl=en&user=CNoy9jcAAAAJ>

ResearcherID: <http://www.researcherid.com/rid/C-2944-2011>

ORCID profile: <https://orcid.org/0000-0002-0870-1368>

A list of 10 selected publications follows

a) Papers most relevant to the subject of this proposal:

- [1] G. Magkos & V. Pavlidou *Deflections of ultra-high energy cosmic rays by the Milky Way magnetic field: how well can they be corrected?* 2019, **JCAP** 02, 004 (arXiv:1802.03409)
- [2] G.V.Panopoulou, K.Tassis, R.Skalidis, D.Blinov, I.Liodakis, V. Pavlidou, S.B.Potter, A.N. Ramaprakash, A.C.S.Readhead, I.K.Weheus, *Demonstration of magnetic field tomography with starlight polarization towards a diffuse sightline of the ISM*, 2019, **ApJ**, 872, 56 (arXiv:1809.09804)
- [3] A. Tritsis, C. Fedderath, & V. Pavlidou *Magnetic field tomography in two clouds towards Ursa Major using HI fibers* 2019, **ApJ** in press, (arXiv:1810.00231)
- [4] R.Skalidis, G.V.Panopoulou, K.Tassis, V.Pavlidou, D. Blinov, I. Komis, I. Liodakis *Local measurements of the mean interstellar polarization at high Galactic latitudes* 2018, **A&A**, 616, 52 (arXiv:1802.04305)
- [5] D. Blinov; V. Pavlidou; et al. *RoboPol: Connection between optical polarization plane rotations and gamma-ray flares in blazars* 2018, **MNRAS**, 474, 1296 (arXiv:1710.08922)

b) Other important discoveries in the past 10 years:

- [6] V. Pavlidou & T. Tomaras *What do the highest-energy cosmic-ray data suggest about possible new physics around 50 TeV?* 2019, **Phys. Rev. D** 99, 123016
- [7] I. Liodakis; V. Pavlidou; I. Papadakis; E. Angelakis; N. Marchili; J.A. Zensus; L. Fuhrmann; V. Karamanavis; I. Myserlis; I. Nestoras; E. Palaiologou; A.C.S. Readhead *Scale invariant jets: from blazars to microquasars* 2017, **ApJ**, 851, 144 (arXiv:1711.03979)
- [8] K. Tassis & V. Pavlidou *Searching for inflationary B modes: can dust emission properties be extrapolated from 350 GHz to 150 GHz?* 2015, **MNRAS** Letters, 451, 90 (arXiv:1410.8136)
- [9] V. Pavlidou & T. Tomaras *Where the world stands still: turnaround as a strong test of Λ CDM cosmology* 2014, **JCAP**, 09, 20 (arXiv: 1310.1920).
- [10] T. Venters & V. Pavlidou, *Proving the intergalactic magnetic field with the anisotropy of the extragalactic gamma-ray background* 2013, **MNRAS**, 432, 3485 (arXiv: 1201.4405).

Co-PI Pavlidou has worked intensively in the past three years in the problem of local measurements of the Galactic magnetic field and the use of such measurements in astrophysical applications. Her work in this direction includes the development, with former U. Crete graduate student A. Tritsis, of a new method of local measurements of the magnetic field [3], the use of polarimetry to probe the Galactic magnetic field [2], [3], and the application of local measurements of the Galactic magnetic field for tracking the path of ultra-high-energy cosmic rays through the Galaxy [1].

Additional important scientific discoveries on high-energy astrophysics and the cosmic evolution of structures since she joined FORTH and the University of Crete as affiliated faculty / faculty member (respectively) are:

- The explicit empirical quantification of the phenomenology of any new physical effect that may be altering the EAS development center-of-mass energies above 50 TeV, based on Auger data [6].
- The discovery that an almost linear scaling exists between rest-frame bolometric radio luminosity and black-hole mass in systems with beamed jets, which extends from stellar-mass to supermassive black holes, making possible targeted searches for the detection of intermediate-mass black hole systems, and placing strong constraints on theoretical models for black-hole jet formation [7].
- The introduction of 3-dimensional effects in the interstellar medium as a cause of pattern decorrelation between frequencies in cosmic-microwave background polarization maps; these are recognized as the predominant yet-uncontrolled foreground in searches of inflationary CMB B-modes [8].

- The introduction of the turnaround radius as a novel dark-energy—probing cosmological observable. Follow-up studies of the turnaround radius with both large-scale cosmological simulations, observations, and in the context of dark energy models and alternative gravity theories are currently actively pursued [9].

Selected invited presentations to international conferences:

- *Ultra-high energy cosmic rays and the Galactic magnetic field*, Caffe Lattes: Cosmological Analyses Featuring Galactic Foreground Emission, Lattes, France, (May 2020), <https://caffelattes.sciencesconf.org/>
- *Understanding blazars through optopolarimetric monitoring*, invited talk, Understanding the multiwavelength blazar variability, Stanford, USA (September 2019) <https://kipac.stanford.edu/events/understanding-multiwavelength-blazar-variability-workshop>
- *The RoboPol Optical Polarization Monitoring Program*, Monitoring the Non-thermal Universe HAP Workshop, Cochem, Germany (September 2018) <https://indico.scc.kit.edu/event/390/timetable/#20180917.detailed>
- *The RoboPol Optical Polarization Monitoring Program*, Polarised Emission from Astrophysical Jets Conference, Ierapetra, Greece (June 2017) http://www3.mpifr-bonn.mpg.de/old_mpifr/jetpol/jetpol/Home.html
- *The RoboPol Optical Polarization Monitoring Program*, Monitoring the Non-thermal Universe HAP Workshop, Cochem, Germany (December 2016) <https://indico.scc.kit.edu/indico/event/254/timetable/#20161208.detailed>
- *RoboPol: First season rotations of optical polarization plane in blazars*, 12th Hellenic Astronomical Conference, Thessaloniki, Greece (July 2015) http://www.helas.gr/conf/2015/program_2015.pdf
- *How to unravel the origin of UHECRs using multi-wavelength instruments: the future*, Multimessenger Approach to Cosmic Rays: Origins and Space frontiers workshop, IAP Paris (November 2013). <http://macros2013.in2p3.fr/program.php>
- *Using astronomy to measure dark matter distributions and infer dark matter particle properties*, Dark Matter in Southern California Symposium, Caltech (January 2013). <http://www.kiss.caltech.edu/cosponsored/dark-matter-sc2013/schedule.html>

Organization of international conferences:

- <http://irfu.cea.fr/Meetings/TeVPA> 2010, Convener, High-energy Astrophysics Session
<http://www3.mpifr-bonn.mpg.de/div/jhs/Welcome.html>, 2014, SOC
<http://hep.physics.uoc.gr/gravihepcosmo2015/Home.html> 2015, SOC, LOC
<http://eas.unige.ch/EWASS2016/session.jsp?id=S2> 2016, SOC
<http://www.helas.gr/conf/2017/>, 2017, SOC
<https://tevpa2017.osu.edu/>, 2017, Convener, Extragalactic Sources Session
<http://www.helas.gr/conf/2019/>, 2019, SOC
<https://eas.unige.ch/EAS2020/session.jsp?id=SS6>, 2020, SOC

Contributions to the early careers of excellent researchers:

The PI's PhD student **I. Liodakis** (PhD 2017) was a recipient of both the 2017 University of Crete Young Researcher Award and the Hellenic Astronomical Society Best PhD Thesis Award (2016-2017). Dr. Liodakis continues his research career as a Kavli Postdoctoral Fellow at the Kavli Institute for Particle Astrophysics and Cosmology at Stanford, USA, and is currently interviewing for faculty positions in the US.

D. Research Support

- 2020- HFRI Grant (PI) "*CIRCE: Cosmic rays at the highest energies: exploring new astrophysics and astroparticle phenomena for the Interpretation of Recent Composition Experimental data*" (€200k)
- 2016- Stavros Niarchos Foundation Grant (co-PI) "*PASIPHAE: Polar-Areas Stellar imaging in Polarization High-Accuracy Experiment*" (\$1.4M)
- 2012-2016 Marie Curie Career Integration Grants (PI)
"*Unveiling the Physics of the Most Active of Galaxies: Using Blazars as Laboratories to Study Supermassive Black Holes and Relativistic Jets*" (€100k)

E. Eligible leaves and obligations: Maternity (2012)