

# Dmitry Blinov

## Personal Information

Date of Birth December 10, 1985

Gender Male

Citizenship Russia

## Education

- 07.12 **PhD**, *Department of Astrophysics, Faculty of Mathematics and Mechanics*, St.Petersburg State University, Russia.  
title *Investigation of blazar's jets structure by means of optical monitoring*  
supervisor V. A. Hagen-Thorn
- 06.08 **M.Sc.**, *Department of Astrophysics, Faculty of Mathematics and Mechanics*, St.Petersburg State University, Russia.

## Professional positions

- 09.19 – pres. **Postdoctoral researcher**, *Institute of Astrophysics*, Foundation for Research and Technology – Hellas, Heraklion, Greece.
- 02.13 – 09.19 **Postdoctoral researcher**, *Department of Physics*, University of Crete, Heraklion, Greece.
- 01.11 – 02.13 **Junior research fellow**, *Astronomical Institute*, St.Petersburg State University, Russia.

## Research Interests

Wavelengths: optical, gamma-rays, radio

Astrophysical systems: Active Galactic Nuclei, blazars, relativistic jets, interstellar dust

Methodology: Polarimetry, statistical analysis, numerical modeling, machine learning

## Fellowships

- 09.09-05.10 Triple I, Erasmus Mundus External Cooperation Window  
08.12-08.13 "Mol A" grant of Russian Foundation for Basic Research

## Long term visits

- 09.09 – 05.10 PhD exchange student, Faculty of Mathematics and Natural SciencesUniversity of Turku, Finland
- 05.16 – 05.16 MaxPlanck-Institut für Radioastronomie, Bonn, Germany
- 08.18 – 09.18 The Inter-University Centre for Astronomy and Astrophysics, Pune, India

## Mentorship

Extensive mentorship experience through his RoboPol and PASIPHAE memberships. Trained graduate students (including Mr. A. Lalakos now a PhD student at Northwestern U., Dr. G.V. Panopoulou, now a professor at Chalmers University; Dr. I. Lioudakis, now a researcher at the IA/FORTH; Dr. R. Skalidis now a postdoc at Caltech, and Mr. I. A. Kypriotakis, current PhD students at U. of Crete; and Dr. M. Balokovic, currently a postdoc at Yale) in the principles of optopolarimetry, the use of RoboPol, and the analysis of its data. Overseen the U. of Crete practical training program for undergraduate students (training in optopolarimetry of Ms. E. Makrydopoulou, Mr. K. Xexakis, Mr. G.-M. Maragkakis, and M.Sc. N. Mandarakas). Co-supervised several student projects led by graduate and undergraduate students. Mentored M.Sc. N. Mandarakas as his sole supervisor both for his undergraduate thesis (completed and defended in 2018, see resulting publication [32] below), for his Masters Thesis (completed and defended in 2020, see resulting publication [19] below). Currently supervising M.Sc. students Ms. A. Arshinova and Ms. P. Novikova. Our collaborative effort resulted in an upcoming publication [2].

## Conferences

Represented RoboPol in most major recent conferences on blazars and polarimetry, including IAU S304 (Multiwavelength AGN Surveys and Studies, Armenia 2013); Extreme astrophysics in an ever-changing-universe-time-domain astronomy in the 21st century (Ierapetra, Greece 2014); Relativistic Jets: Creation, Dynamics, and internal physics (Krakow, Poland 2015); Blazars through sharp multiwavelength eyes (Malaga, Spain 2016); Polarised Emission from Astrophysical Jets (Ierapetra, Greece 2017); and Half a Century of Blazars and Beyond (Torino, Italy 2018); Understanding blazars through multiwavelength variability (Invited, Stanford, USA, 2019); AGN and Polarimetry conference (Online/Strasbourg, France, 2020); Looking at the polarized Universe: past, present, and future (Online/Heraklion, Greece, 2021); IAUS 375: The Multimessenger Chakra of Blazar Jets (Kathmandu, Nepal, 2022). Participated and helped organize 9 RoboPol Collaboration Workshops and 3 PASIPHAE Collaboration Meetings.

## Major Collaborations

Whole Earth Blazar Telescope (<https://www.oato.inaf.it/blazars/webt/>)

international consortium created to study blazars via extensive monitoring in multiple bands from radio to optical

RoboPol (<http://robopol.org>)

comprehensive optical polarization monitoring program mainly devoted to search of polarization plane rotations in blazars and investigate their connection to  $\gamma$ -ray activity

SMILE (<https://smilescience.info/>)

The SMILE project aims to search for milli-lenses, gravitational lens systems on milli-arcsecond scales, using VLBI data from a large sample of radio loud active galaxies. By identifying these milli-lenses, the project seeks to test dark matter models and explore the nature of supermassive compact objects.

## PASIPHAE (<http://pasiphae.science>)

the largest ever optical polarimetric survey of millions of stars towards the Galactic poles intended to perform the magnetic field tomography and help to find B-mode polarization in CMB

## LiteBIRD

(Lite satellite for the study of B-mode polarization and Inflation from cosmic background Radiation Detection) is a proposed Japanese satellite mission designed to study the polarization of the cosmic microwave background radiation. It aims to detect the B-mode polarization signal, which could provide crucial insights into the inflationary period of the early universe.

## Press-releases

- 2021 "Scientists explain the behaviour of the optical emission of blazars" [link](#)
- 2023 "When a black hole destroys a star!" [link 1](#), [link 2](#)

## Publications

Authoring/co-authoring 97 refereed articles. These works has received over 4385 citations. H-index of 37 according to NASA's [Astrophysics Data System](#) (5969 citations and h-index=42 according to [Google Scholar](#)). Full refereed publications list (with clickable links to each paper):

- [1] I. Liodakis, E. Shablovinskaya, **D. Blinov**, et al. *Optical circular polarization of blazar S4 0954+65 during high linear polarized states* A&A, 680, L11 (2023) [arXiv:2311.03450](#)
- [2] P. Novikova, E. Shishkina, **D. Blinov**, et al. *Repeated patterns of gamma-ray flares suggest structured jets of blazars as likely neutrino sources* MNRAS, 526, 347 (2023) [arXiv:2304.13044](#)
- [3] S. Maharana, S. Kiehlmann, ..., **D. Blinov**, et al. *Bright-Moon sky as a wide-field linear Polarimetric flat source for calibration* A&A, 679, A68 (2023) [arXiv:2305.04270](#)
- [4] L. Di Gesu, ..., **D. Blinov**, et al. *Discovery of X-ray polarization angle rotation in the jet from blazar Mrk 421* Nature Astronomy, 7, 1245 (2023) [arXiv:2305.13497](#)
- [5] **D. Blinov**, et al. *The RoboPol sample of optical polarimetric standards* A&A, 677, A144 (2023) [arXiv:2307.06151](#)
- [6] I. Liodakis, K. I. I. Koljonen, **D. Blinov**, et al. *Optical polarization from colliding stellar stream shocks in a tidal disruption event* Science, 380, 656 (2023) [arXiv:2208.14465](#)
- [7] F. Marin, ..., **D. Blinov**, et al. *Polarimetry of the potential binary supermassive black hole system in J1430+2303* A&A, 673, A126 (2023) [arXiv:2304.05003](#)
- [8] P. Reig, A. Tzouvanou, **D. Blinov**, V. Pantoulas *Long-term optical variability of the Be/X-ray binary GRO J2058+42* A&A, 671, A48 (2023) [arXiv:2301.09415](#)
- [9] V. Pelgrims, ..., **D. Blinov**, et al. *Starlight-polarization-based tomography of the magnetized ISM: PASIPHAE's line-of-sight inversion method* A&A, 670, A164 (2023) [arXiv:2208.02278](#)
- [10] N. Mandarakas, ..., **D. Blinov**, et al. *GRB 210619B optical afterglow polarization* A&A, 670, A144 (2023) [arXiv:2208.13821](#)

- [11] R. Middei, ..., **D. Blinov**, et al. *X-Ray Polarization Observations of BL Lacertae* ApJ, 942, L10 (2023) [arXiv:2211.13764](https://arxiv.org/abs/2211.13764)
- [12] H. Krawczynski, ..., **D. Blinov**, et al. *Polarized x-rays constrain the disk-jet geometry in the black hole x-ray binary Cygnus X-1* Science, 378, 650 (2022) [arXiv:2206.09972](https://arxiv.org/abs/2206.09972)
- [13] R. Skalidis, ..., **D. Blinov**, et al. *HI-H<sub>2</sub> transition: exploring the role of the magnetic field* A&A 665, A77 (2022) [arXiv:2110.11878](https://arxiv.org/abs/2110.11878)
- [14] S. Maharana, ..., **D. Blinov**, et al. *WALOP-South: a four-camera one-shot imaging polarimeter for PASIPHAE survey. Paper II - polarimetric modeling and calibration* JATIS, 8, 038004 (2022) [arXiv:2208.12441](https://arxiv.org/abs/2208.12441)
- [15] I. Liodakis, **D. Blinov**, S. B. Potter, F. M. Rieger *Constraints on magnetic field and particle content in blazar jets through optical circular polarization* MNRAS, 509, L21 (2022) [arXiv:2110.11434](https://arxiv.org/abs/2110.11434)
- [16] C. Casadio, **D. Blinov**, et al. *SMILE: Search for Milli-LEnses* MNRAS, 507, L6 (2021) [arXiv:2107.06896](https://arxiv.org/abs/2107.06896)
- [17] S. Kiehlmann, **D. Blinov**, et al. *The time-dependent distribution of optical polarization angle changes in blazars* MNRAS, 507, 225 (2021) [arXiv:2104.02622](https://arxiv.org/abs/2104.02622)
- [18] **D. Blinov**, et al. *Repeated pattern of gamma-ray flares in the lightcurve of the blazar 3C 279* MNRAS, 505, 4616 (2021) [arXiv:2105.09955](https://arxiv.org/abs/2105.09955)
- [19] N. Mandarakas, **D. Blinov**, et al. *Local alignments of parsec-scale AGN radiojets* A&A, 653, A123 (2021) [arXiv:2106.06546](https://arxiv.org/abs/2106.06546)
- [20] **D. Blinov**, et al. *RoboPol: AGN polarimetric monitoring data* MNRAS, 501, 3 (2021) [arXiv:2012.00008](https://arxiv.org/abs/2012.00008)
- [21] A.A. Nikiforova, ..., **D. Blinov**, et al. *Parameters of the type-IIP supernova SN 2012aw* MNRAS, 504, 3544 (2021) [arXiv:2102.04388](https://arxiv.org/abs/2102.04388)
- [22] S. Maharana, ..., **D. Blinov**, et al. *WALOP-South: a four-camera one-shot imaging polarimeter for PASIPHAE survey. Paper I—optical design* JATIS, 7, 014004 (2021) [arXiv:2102.09505](https://arxiv.org/abs/2102.09505)
- [23] I. Liodakis, **D. Blinov**, et al. *Two Flares with One Shock: The Interesting Case of 3C 454.3* ApJ, 902, 1 (2020) [arXiv:2008.08603](https://arxiv.org/abs/2008.08603)
- [24] V.A. Acciari, ..., **D. Blinov**, et al. *Unraveling the Complex Behavior of Mrk 421 with Simultaneous X-Ray and VHE Observations during an Extreme Flaring Activity in 2013 April* ApJS, 248, 2, (2020) [arXiv:2001.08678](https://arxiv.org/abs/2001.08678)
- [25] Y.Y. Kovalev, D.I. Zobnina, A.V. Plavin, and **D. Blinov**, *Optical polarization properties of AGNs with significant VLBI-Gaia offsets* MNRAS, 493, L54 (2020) [arXiv:2001.02723](https://arxiv.org/abs/2001.02723)
- [26] **D. Blinov**, C. Casadio, N. Mandarakas, E. Angelakis, *Global alignments of parsec-scale AGN radio jets and their polarization planes* A&A, 635, A102 (2020) [arXiv:2002.00982](https://arxiv.org/abs/2002.00982)
- [27] D. Paranjpye, A. Mahabal, A.N. Ramaprakash, G.-V. Panopoulou, K. Cleary, A.C.S. Readhead, **D. Blinov**, K. Tassis, *Eliminating artefacts in polarimetric images using deep learning* MNRAS 491, 5151 (2020) [arXiv:1911.08327](https://arxiv.org/abs/1911.08327)
- [28] I. Liodakis & **D. Blinov**, *Probing the unidentified Fermi blazar-like population using optical polarization and machine learning* MNRAS, 486, 3 (2019) [arXiv:1904.04278](https://arxiv.org/abs/1904.04278)
- [29] A. N. Ramaprakash, ..., **D. Blinov**, et al. *RoboPol: a four-channel optical imaging polarimeter* MNRAS, 485, 2 (2019) [arXiv:1902.08367](https://arxiv.org/abs/1902.08367)
- [30] **D. Blinov** & V. Pavlidou, *The RoboPol Program: Optical Polarimetric Monitoring of Blazars* Galaxies, 7, 2 (2019) [arXiv:1904.05223](https://arxiv.org/abs/1904.05223)
- [31] G.-V. Panopoulou, B.S. Hensley, R. Skalidis, **D. Blinov** and K. Tassis, *Extreme starlight polarization in a region with highly polarized dust emission* (2019) [arXiv:1903.09684](https://arxiv.org/abs/1903.09684)

- [32] N. Mandarakas, **D. Blinov**, et al. *Search for AGN counterparts of unidentified Fermi-LAT sources with optical polarimetry. Demonstration of the technique* A&A, 623, A61 (2019) [arXiv:1810.06312](#)
- [33] G.-V. Panopoulou, ..., **D. Blinov**, et al. *Demonstration of Magnetic Field Tomography with Starlight Polarization toward a Diffuse Sightline of the ISM* ApJ, 872, 56 (2019) [arXiv:1809.09804](#)
- [34] C. Casadio, ..., **D. Blinov**, et al. *The magnetic field structure in CTA 102 from high-resolution mm-VLBI observations during the flaring state in 2016-2017* A&A, 622, A158 (2019) [arXiv:1812.02194](#)
- [35] M.L. Ahnen, ..., **D. Blinov**, et al. *Extreme HBL behavior of Markarian 501 during 2012* A&A, 620, A181 (2018) [arXiv:1808.04300](#)
- [36] A. Słowińska, K. Krzeszowski, M. Źejmo, **D. Blinov**, P. Reig, *Optical linear polarization of helium-rich white dwarfs sample with the RoboPol polarimeter* MNRAS, 479, 5312 (2018) [doi.org/10.1093](#)
- [37] **D. Blinov**, V. Pavlidou, I. Papadakis, et al. *RoboPol: Connection between optical polarization plane rotations and gamma-ray flares in blazars* MNRAS, 474, 1296 (2018) [arXiv:1710.08922](#)
- [38] P. Reig & **D. Blinov** *Warped disks during type II outbursts in Be/X-ray binaries: evidence from optical polarimetry* A&A, 616, A52 (2018) [arXiv:1808.08726](#)
- [39] R. Skalidis, G. V. Panopoulou, K. Tassis, V. Pavlidou, **D. Blinov** et al. *Local Measurements of the Mean Interstellar Polarization at High Galactic Latitudes* A&A, 616, A52 (2018) [arXiv:1802.04305](#)
- [40] E. Angelakis, S. Kiehlmann, I. Myserlis, **D. Blinov** et al. *Optical polarisation variability of radio loud narrow line Seyfert 1 galaxies. Search for long rotations of the polarisation plane* A&A, 618, A92 (2018) [arXiv:1807.02382](#)
- [41] Słowińska A., Krzeszowski K., Źejmo M., **Blinov D.**, Reig P. *Optical linear polarization of helium rich white dwarfs sample with the RoboPol polarimeter* MNRAS, 479, 5312 (2018) [2018MNRAS.479.5312S](#)
- [42] S. Kiehlmann, **D. Blinov**, T. Pearson, I. Liodakis *Optical EVPA rotations in blazars: testing a stochastic variability model with RoboPol data* MNRAS, 472, 3589 (2017) [arXiv:1708.06777](#)
- [43] M. Uemura, R. Itoh, I. Liodakis, **D. Blinov** et al. *Optical polarization variations in the blazar PKS 1749+096* PASJ, 69, 96 (2017) [arXiv:1709.02524](#)
- [44] M. Ahnen, S. Ansoldi, L. Antonelli, ..., **D. Blinov** et al. *Multiband variability studies and novel broadband SED modeling of Mrk 501 in 2009* A&A, 603, A31 (2017) [arXiv:1612.09472](#)
- [45] C. Raiteri, F. Nicastro, A. Stamerra, M. Villata, V. Larionov, **D. Blinov** et al. *Synchrotron emission from the blazar PG 1553+113. An analysis of its flux and polarization variability* MNRAS, 466, 3762 (2017) [arXiv:1612.07000](#)
- [46] I. Liodakis, **D. Blinov**, I. Papadakis, V. Pavlidou, *Estimating the distribution of rest-frame time-scales for blazar jets: a statistical approach* MNRAS, 465, 4783 (2017) [arXiv:1511.00434](#)
- [47] M. Źejmo, A. Słowińska, K. Krzeszowski, P. Reig, **D. Blinov**, *Optical linear polarization of 74 white dwarfs with the RoboPol polarimeter* MNRAS, 464, 1294 (2017) [arXiv:1609.00524](#)
- [48] P. Reig, P. Blay, **D. Blinov**, *The optical counterpart to the Be/X-ray binary SAX J2239.3+6116* A&A, 598, A16 (2017) [arXiv:1609.09215](#)
- [49] E. Angelakis, T. Hovatta, **D. Blinov** et al. *RoboPol: the optical polarization of gamma-ray-loud and gamma-ray-quiet blazars* MNRAS, 463, 3365 (2016) [arXiv:1609.00640](#)
- [50] T. Hovatta, E. Lindfors, **D. Blinov** et al. *Optical polarization of high-energy BL Lacertae objects* A&A, 596, A78 (2016) [arXiv:1608.08440](#)
- [51] I. Troitskiy, D. Morozova, S. Jorstad, V. Larionov, A. Marscher, I. Agudo, **D. Blinov**, P. Smith, Y. Troitskaya, *Multi-Frequency Monitoring of the Flat Spectrum Radio Quasar PKS 1222+216 in 2008-2015* Galaxies, 4, 72 (2016) [Galaxies:4-72](#)

- [52] Y. Troitskaya, V. Larionov, V. Hagen-Thorn, D. Morozova, **D. Blinov** et al. *Multiwavelength Monitoring of the Gamma-Bright Blazar Mkn 421 Galaxies*, 4, 67 (2016) [Galaxies:4-67](#)
- [53] K. Williamson, S. Jorstad, A. Marscher, V. Larionov, I. Agudo, A. Arkharov, **D. Blinov** et al. *Correlation Analysis of Delays between Variations of Gamma-Ray and Optical Light Curves of Blazars Galaxies*, 4, 64 (2016) [Galaxies:4-64](#)
- [54] **D. Blinov**, V. Pavlidou, I. Papadakis et al. *RoboPol: do optical polarization rotations occur in all blazars?* MNRAS, 462, 1775 (2016) [arXiv:1607.04292](#)
- [55] V. Larionov, M. Villata, C. Raiteri, ..., **D. Blinov** et al. *Exceptional outburst of the blazar CTA 102 in 2012: the GASP-WEBT campaign and its extension* MNRAS, 461, 3047 (2016) [arXiv:1606.07836](#)
- [56] C. Casadio, J. Gómez, S. Jorstad, ..., **D. Blinov** et al. *The Connection between the Radio Jet and the  $\gamma$ -ray Emission in the Radio Galaxy 3C 120 and the Blazar CTA 102 Galaxies*, 4, 34 (2016) [Galaxies:4-34](#)
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- [59] **D. Blinov**, V. Pavlidou, I. Papadakis et al. *RoboPol: optical polarization-plane rotations and flaring activity in blazars* MNRAS, 457, 2252 (2016) [arXiv:1601.03392](#)
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- [61] C. Casadio, J. Gómez, S. Jorstad, ..., **D. Blinov** et al. *A Multi-wavelength Polarimetric Study of the Blazar CTA 102 during a Gamma-Ray Flare in 2012* ApJ, 813, 14 (2015) [arXiv:1508.07254](#)
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- [64] M. Carnerero, C. Raiteri, M. Villata, ..., **D. Blinov** et al. *Multiwavelength behaviour of the blazar OJ 248 from radio to  $\gamma$ -rays* MNRAS, 450, 2677 (2015) [arXiv:1505.00916](#)
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- [66] E. Angelakis, L. Fuhrmann, N. Marchili, L. Foschini, I. Myserlis, V. Karamanavis, S. Komossa, **D. Blinov**, T. Krichbaum, A. Sievers, H. Ungerechts, J. A. Zensus, *Radio jet emission from GeV-emitting narrow-line Seyfert 1 galaxies* A&A, 575, A55 (2015) [arXiv:1501.02158](#)
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- [69] O. King, **D. Blinov**, D. Giannios et al. *Early-time polarized optical light curve of GRB 131030A* MNRAS, 445, 114 (2014) [arXiv:1409.2417](#)
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- [71] J. Aleksić, S. Ansoldi, L. Antonelli, ..., **D. Blinov** et al. *MAGIC gamma-ray and multi-frequency observations of flat spectrum radio quasar PKS 1510-089 in early 2012* A&A, 569, A46 (2014) [arXiv:1401.5646](#)

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- [75] M. Ackermann, M. Ajello, A. Allafort, ..., **D. Blinov** et al. *Multifrequency Studies of the Peculiar Quasar 4C +21.35 during the 2010 Flaring Activity* ApJ, 786, 17 (2014) [arXiv:1403.7534](#)
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- [77] V. Hagen-Thorn, V. Larionov, **D. Blinov**, A. Arkharov, E. Hagen-Thorn, E. Borisova, L. Takalo, A. Sillanpää, *Variability of the blazar 3C 454.3 during 2007-2010* ARep, 57, 726 (2013) [ARep:57](#)
- [78] G. Bhatta, J. Webb, H. Hollingsworth, ..., **D. Blinov** et al. *The 72-h WEBT microvariability observation of blazar S5 0716+714 in 2009* A&A, 558, A92 (2013) [arXiv:1310.4670](#)
- [79] S. Jorstad, A. Marscher, P. Smith, ..., **D. Blinov** et al. *A Tight Connection between Gamma-Ray Outbursts and Parsec-scale Jet Activity in the Quasar 3C 454.3* ApJ, 773, 27 (2013) [arXiv:1307.2522](#)
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- [81] C. Raiteri, M. Villata, P. Smith, ..., **D. Blinov** et al. *Variability of the blazar 4C 38.41 (B3 1633+382) from GHz frequencies to GeV energies* A&A, 545, A48 (2012) [arXiv:1207.3979](#)
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- [85] V. Hagen-Thorn, **D. Blinov**, E. Hagen-Thorn, *Color variability of BL Lac in 2002-2008* ARep, 55, 1000 (2011) [ARep:55-100](#)
- [86] C. Raiteri, M. Villata, M. Aller, ..., **D. Blinov** et al. *The long-lasting activity of 3C 454.3. GASP-WEBT and satellite observations in 2008-2010* A&A, 534, A87 (2011) [arXiv:1107.1093](#)
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