

Dr. Pradip Gatkine

University of California Los Angeles
475 Portola Plaza,
UCLA, Los Angeles CA 90095

Email: pgatkine@astro.ucla.edu
<https://gatkine.astro.ucla.edu/>
[Google Scholar](#)

RESEARCH INTERESTS

Astrophotonics: On-chip diffraction-limited spectrographs, photonic nulling interferometers, precise filters, photonic lanterns, dynamic spectral shapers

Exoplanets: High-precision instrumentation approaches to detect and characterize exoplanets.

Observational cosmology: Galaxy evolution, early universe, cosmic acceleration

Cosmic gas flows: Interstellar/intergalactic/circumgalactic media, galactic flows

EMPLOYMENT

Assistant Professor of Physics & Astronomy, University of California Los Angeles	March 2024 -
NASA Hubble Fellow (hosted at Caltech)	Sept 2021 - Feb 2024
David & Ellen Lee Prize Postdoctoral Fellowship, Caltech	Sept 2020 - Present
NASA Earth & Space Science Fellowship (hosted at Univ. of MD)	Aug 2018 - Aug 2020
Graduate Research Assistant, Univ. of MD	Aug 2014 - July 2018

EDUCATION

University of Maryland College Park	
PhD in Astronomy	July 2020
Thesis: Building astrophotonic spectrographs & Probing the early universe with Gamma-ray Bursts	
M.S. in Astronomy	2014 - 2016
M.S. Thesis: Development of near-IR on-chip astrophotonic spectrographs and filters	
Indian Institute of Technology Bombay	2010-2014
B.Tech. in Mechanical Engineering (with Honors) and Minor in Physics	
Thesis: Cosmic-ray flux measurement payload for a weather balloon	

FELLOWSHIPS

- NASA Hubble Fellowship (hosted at Caltech) 2021-24
- David & Ellen Lee Prize Postdoctoral Fellowship, Caltech 2020
- MIT Kavli Fellowship (declined) 2020
- NASA Earth & Space Science Fellowship (now FINESST), with 3 years of support (\$45k/yr) 2018-20
- Kulkarni Graduate Student Summer Research Fellowship (\$5000), Univ. of Maryland 2016
- Dean's Fellowship (\$10,000) and Merit Fellowship (\$2000), awarded to outstanding incoming graduate students, University of Maryland 2014-15

AWARDS

- Board of Visitors Outstanding Graduate Student Award for research excellence, UMD (\$5k) 2020
* *One award across 12 departments in the Computer, Math, & Natural Sciences College at UMD*
- Rodger Doxsey Dissertation Travel Award, American Astronomical Society 2020
- Andrew S. Wilson Prize for Excellence in Research, UMD Astronomy 2019
- Outstanding Graduate Assistant Award, Univ. of Maryland 2019
- SPIE Optics and Photonics Education Scholarship (\$3500), for the prospect of long term contribution to the field of optics and photonics, International Society for Optics and Photonics 2017
- Best Poster award (2nd author) at SPIE Astronomical Telescopes + Instrumentation* 2022 2022

- Best Student Presentation award at SPIE Astronomical Telescopes + Instrumentation* 2016 2016
* *This is the most important international conference in Astronomical Instrumentation.*
- Best Poster Award, Nanotechnology Day, University of Maryland 2016
- John Chi-Lin Wang Award for Academic Excellence (\$1000), for best overall performance in Masters research and coursework, Dept of Astronomy, University of Maryland 2016

SUCCESSFUL GRANTS

* These are highly competitive proposals to acquire research funding.

- **NASA Astrophysics Research and Analysis (2023), Co-Investigator**, \$900,000
Photonic High-Resolution Broadband Spectrographs for Space-Based Astrophysics Missions
- **NASA Hubble Postdoctoral Fellowship (2021-24), PI**, \$384,000
Probing the CGM-Galaxy Connection Using Multi-object Spectroscopy and Astrophotonics
- **Keck Institute of Space Sciences (2022), Science PI**, \$85,000
High-resolution on-chip spectrographs to detect biosignatures with future space missions
- **NASA Astrophysics Research and Analysis (2022), Collaborator**, \$767,000
Miniature Photonic Filters, Spectrometers, and Nulling Interferometers for Astrophysics
- **NSF Advanced Technologies and Instrumentation (2021): Collaborator**, \$317,639
Mastering the photonic lantern: The key to transformative diffraction-limited spectroscopy
- **Keck Institute of Space Sciences (2020), co-I**, \$200,000
An all-photonic dynamic spectrum flattener for laser frequency combs
- **NASA Earth and Space Science Fellowship (2018-20), PI**, \$135,000
Using Gamma-Ray Bursts to Probe the Metal Enrichment History of the Universe
- **SPIE Educational Outreach grant (2017): PI**, \$3000
Putting the Distant Worlds in the Right Spot
- **SPIE Optics and Photonics Education Scholarship (2017): PI**, \$3500
For the prospect of long-term contribution to the field of optics and photonics

TELESCOPE TIME PROPOSALS

* These are highly competitive proposals to acquire telescope time on some of the largest telescopes in the world.

- **NICER X-ray Telescope: PI**, Target of Opportunity, 40 ks
The unusual spectral and temporal evolution of a nearby GRB 190829A (2019)
- **NUSTAR X-ray Telescope: PI**, Target of Opportunity, 40 ks
The unusual spectral and temporal evolution of a nearby GRB 190829A (2019)
- **Very Large Array: PI**, Semester 2020A, Observing time: 26.1 hours
Tracing the Molecular Gas in GRB host galaxies at $z > 2$
- **Very Large Array: PI**, Semester 2018B, Observing time: 24 hours
Measuring the star formation rate of massive GRB hosts in the CGM-GRB sample
- **Lowell Discovery Telescope: PI**, Semesters 2020A (3 nights), 2020B (3 nights), 2019A (3 nights), 2019B (3 nights); Co-I 2018A (3 nights)
Gamma-ray bursts and their host environments
- **Hubble Space Telescope: Co-I**, Cycle 25, Time: 6 orbits
Coordinated Far-Ultraviolet and Radio Observations of the Feedback Engine in Quasar Mrk 231
- **Keck Telescope: PI**, Semester 2021A, 2021B, 2022B, 2023A, 2023B (KCWI IFU: 5 nights, LGS-AO: 4 nights)
CGM of high- z GRB hosts

- **Keck Telescope: Co-I**, Semesters 2018B, 2019A, 2019B (Target of Opportunity)
Spectroscopy of Gravitational Wave Counterparts: Constraining the Origin of r-process Elements
- **Gemini-S Telescope: PI**, Semester 2022B
CGM of high-z GRB hosts

MENTORSHIP EXPERIENCE

Graduate Students

- **Nov 2020 – March 2023**: Main advisor for Master’s thesis of **Harsha Pradeep** at the International School of Photonics, India
Topic: Optimizing tapers and cross-dispersion for on-chip photonic spectrographs
- **Jan 2019 – Jan 2021**: Co-mentored **Joseph Durbak** at the Univ. of MD College Park (Physics)
Topic: Observations of GRBs and GRB host galaxies
- **Sept 2022 – Present**: Co-mentoring **Ai Xiheng** at the Univ. of MD College Park (ECE)
Topic: Flat focal plane Arrayed Waveguide Gratings

Undergraduate Students

- **Sept 2023 – Present**: Mentoring **Vivasvaan Aditya Raj** at UCLA
Topic: Spectral extraction algorithm for near-IR integrated photonic spectrographs
- **Sept 2022 – Present**: Mentoring **Greg Sercel** at Cal State LA
Topic: Characterization of broadband near-IR on-chip photonic spectrographs
- **June – Sept 2022**: Mentored **Abhinav Ganesh**, at UC Santa Barbara (SURF)
Topic: Spectral extraction pipeline for high-resolution ($R \sim 12,000$) on-chip photonic spectrographs
- **June 2021 – Feb 2022**: Mentored **Marcos Perez** at Caltech (SURF)
Topic: Simulating the performance of photonic spectrographs for exoplanet spectroscopy
- **2018 – 2022**: Main advisor for Bachelor’s thesis of **Meghna Sitaram** at Univ. of MD
Topic: Building a near-infrared camera for on-chip photonic spectrographs (2018 - 2020)
- **June – Sept 2018**: Mentored two students (**DeOndre Kittrell** and **Rishap Lamichhane**) as a part of **GRAD-MAP¹** Summer Scholars Program, Univ of MD.
Topic: Simulation and design of kilonova observations with James Webb Space Telescope
- **Jan 2018**: Mentored three undergraduate students (**Juzel Lloyd**, **DeOndre Kittrell**, **Alexandra Iturralde**) as a part of **GRAD-MAP¹** winter workshop, Univ. of MD
Topic: GW170817 evolution: Kilonova lightcurve and SED fitting
- **Sept 2017 – June 2018**: Mentored two UMD undergraduates (**Gregorio Zimmerman** and **Yoav Margolis**) as a part of SPIE Educational Outreach grant (as PI)
Topic: Building demonstrations of optical technologies in astronomy
- **Jan 2013 – June 2014**: Led a 10-member team of Mars Society India, IIT Bombay for the development of a prototype mars rover and field trials at *Arkaroola Mars Robot Challenge Expedition* in Australia

High-school Student

- **June – Sept 2017**: Mentored a high-school student **Cristian Ordonez**
Topic: Search for gravitationally lensed transients in the iPTF survey

¹GRAD-MAP is an initiative to increase the involvement of underrepresented minorities in physics and astronomy.

TEACHING

Training

- Successfully completed a course – *An Introduction to Evidence-Based Undergraduate STEM Teaching* (Summer 2019, Center for the Integration of Research Teaching and Learning (CIRTL) – [Certificate](#))
- Successfully completed a course on *Principles of University Teaching and Learning in STEM* (Spring 2021, Caltech, Center for Teaching, Learning & Outreach) [Link](#)
- As a Univ of MD Graduate Innovation Fellow (2020), I learnt about innovation mindsets and served as a Peer Innovation Coach in 3 creativity workshops on prototyping, improvisations, and feedback synthesis.

Teaching/Tutoring experience

- Guest lectures for the course *Honors 289V: Mars Exploration: Past, Present, Future*, Instructor: Prof. Douglas Hamilton (Spring 2017, 2018, 2019)
- Guest lecture on Application of Markov Chain Monte Carlo method to spectroscopy in the course *Astro 866S: Practical Astrostatistics*, Instructor: Prof. Cole Miller (Spring 2018)
- Served a guest teaching assistant in *Astro 320: Theoretical Astrophysics*, Instructor: Prof. Massimo Ricotti, (Spring 2019)
- Served as a hands-on tutor for MCMC sampling techniques at the ZTF Summer School (Aug 2021)
- Served as a hands-on tutor for optical and X-ray data analysis at the ZTF Summer School (Aug 2020)
- Served as Python bootcamp mentor at [GRAD-MAP Winter workshop](#), Univ of Maryland (2018)

SERVICE

- Co-led the invited paper, [Astrophotonics Roadmap](#). This is an extensive vision document contributed by the global astrophotonics community, published by JPhys Photonics (March 2023 – October 2023)
- Led the [Astrophotonics White Paper](#) for Astro2020 Decadal Survey
- Science team member of NASA explorer mission study: CETUS – Cosmic Evolution Through UV Spectroscopy
- Review panelist for NASA Hubble Space Telescope Time Allocation Committee (2023)
- Review panelist for NSF Advanced Technologies and Instrumentation (ATI) (2021)
- Review panelist for NASA Astrophysics Data Analysis Program (ADAP) (2021)
- Reviewer for Future Investigators in NASA Earth and Space Science and Technology (FINESST) (2022)
- Referee for various high-impact journals: Optics Express, Optics Letters, Optical Engineering, Applied Optics, Journal of Optical Society of America (B), IEEE Photonics Journal, Photonics Research, Journal of Astronomical Telescopes, Instruments, and Systems (JATIS)
- Science Organizing Committee member, Keck Science Meeting, September 2021
- Review panelist for Keck & Palomar telescopes time allocation committee (TAC), 2021B and 2022A
- NASA Goddard internship program poster presentation judge (2016)
- Journal club organizer, UMD Astronomy (2015-18)

OUTREACH EFFORTS

- Mentor at [NASA Hubble Fellowship Program Mentorship Initiative](#) to increase the participation of underrepresented groups in Astronomy (July 2022 - present)
- Delivered a lecture on ‘How to come up with a winning fellowship proposal’ at the [AMP-UP workshop](#) for the NASA Hubble Fellowship Program Mentorship Initiative (September 2023).

- Arranged a live photonics lab tour for a team of 19 high-school students from Hawaii (March 2022)
- Appeared on [Ed Sharpener YouTube channel](#) (18.3k subscribers) to talk about pursuing a career in Astronomy (24 Feb 2022)
- Appeared on [Kalam Labs YouTube channel](#) (10.9k subscribers) for a Christmas Special talk answering K-8 students' questions related to Astronomy and JWST launch (25 Dec 2021)
- Served as [American Astronomical Society Ambassador](#) for local outreach activities (2019-20)
- Created and led a popular science activity: *Putting the Distant Worlds in the Right Spot* for [Maryland Day](#) (3000+ visitors), as a part of [SPIE Educational Outreach grant](#) (2017-18)
- Delivered science popularization talks at *College Park Academy* public school for high school students (2016)
- Volunteered at the *4th USA Science and Engg Festival* with 'Science Laser Spectacular' activity (2016)
- Mentored and took science classes for academically struggling middle-school students at a government school in Mumbai, India as a part of National Service Scheme (2010-11)

PROFESSIONAL TALKS

1. *Invited Colloquium: Indian Institute of Technology Kanpur, India 01/2024
Astrophotonics revolution in astronomical instrumentation
2. Contributed Talk: Center for Adaptive Optics Fall Retreat, University of California Santa Cruz 11/2023
3. *Invited Instrumentation Talk: Physics and Astronomy Department, University College London 10/2023
4. *Invited Talk: IACTEC, Observatorios de Canarias, Instituto de Astrofisica de Canarias 07/2023
5. Contributed Talk: Conference on Lasers and Electro-Optics (CLEO) 06/2023
6. *Invited Talk: Department of Astronomy, Penn State University 05/2023
7. *Invited Talk: Department of Physics and Astronomy, University of California Los Angeles 04/2023
8. *Invited Talk: Department of Astronomy, University of Hawaii (Hilo) 03/2023
9. *Invited Talk: Department of Physics and Astronomy, University of Rochester 02/2023
10. *Invited Talk: Department of Astronomy, Boston University 02/2023
11. *Invited Talk: Space Telescope Science Institute (STScI), Baltimore 02/2023
Measuring Cosmic Flows with Astrophotonics
12. *Invited Talk: Laboratory for Innovation in Optomechanics (LIOM), IAC 02/2023
Astrophotonics - Directions and Opportunities
13. *Colloquium: McGill Space Institute 03/2023
Astrophotonics revolution in astronomical instrumentation
14. *Invited Talk: Carnegie Observatories 10/2022
Astronomical spectrographs on a chip: Getting ready for the next-generation telescopes
15. NASA Hubble Fellows Symposium 09/2022
Developing photonic spectrographs with R > 30,000

16. Exoplanet Atmospheres Symposium, Flatiron Institute 08/2022
17. *Invited Seminar: National Science Foundation, Washington DC 07/2022
18. Contributed talk: SPIE Astronomical Telescopes + Instrumentation, Montreal 07/2022
19. Contributed talk: 240th Meeting of The American Astronomical Society, Pasadena, CA 06/2022
20. *Invited Seminar: Institute for Planetary sciences and Astrophysics, Grenoble, France
Astrophotonic Spectrographs on a chip 05/2022
21. *Invited Colloquium: Amity University, India 02/2022
Astrophotonic Spectrographs
22. *Invited Colloquium: University of Hawaii, Manoa 12/2021
Astronomical spectrographs on a chip: Getting ready for the next-generation telescopes
23. NASA Hubble Fellows Symposium 10/2021
High-resolution astronomical spectrographs on a chip
24. *Invited Talk: Conference on astro-photonics & MKID-arrays 09/2021
On-chip Arrayed Waveguide Grating (AWG) spectrometers for astronomy
25. *Invited talk: Global Webinar on Laser, Optics and Photonics 09/2021
Astronomical spectrographs on a chip
26. Contributed talk: SPIE Optics and Photonics, Virtual talk 08/2021
27. *Invited talk: Indian Institute of Science, Dept of Astronomy 06/2021
Recent Advances in Astrophotonics
28. *Invited talk: Space Science & Astrobiology Division Seminar, NASA Ames Research Center 05/2021
Astronomical spectrographs and filters on a chip
29. *Invited talk: NASA JPL Micro-devices Laboratory Seminar 04/2021
Recent Advances in Astrophotonics: Integrated Spectrometers and Photonics Filters
30. *Invited seminar: MIT Brown Bag Lunch Seminar 03/2021
31. *Invited talk: AAO-MQ seminar at Australian Astronomical Optics, Macquarie University 10/2020
Astronomical spectrographs on a chip - Getting ready for the next-generation telescopes
32. Dissertation talk: 235th Meeting of The American Astronomical Society, Hawaii 01/2020
33. Instrumentation Talk: Dept of Astronomy, Univ of California, Santa Cruz 01/2020
34. Lunch talk: Kavli Institute for Particle Astrophysics and Cosmology, Stanford University 01/2020
35. Lunch Talk: Space Telescope Science Institute, Baltimore, MD 10/2019
36. Afternoon Talk: Dept of Astronomy, Univ. of California, Berkeley 09/2019
37. Afternoon Talk: Caltech Optical Observatories 09/2019
38. ARI Seminar: Astrophysics Research Institute, Liverpool John Moores University, UK 06/2019
39. Lunch Extragalactic Seminar: Kavli Institute for Cosmology, University of Cambridge, UK 06/2019
40. *Contributed talk: 233rd Meeting of The American Astronomical Society, Seattle 01/2019
Probing the circumgalactic medium in the early universe
41. Instrumentation Group Talk: Australian Astronomical Observatory, Sydney 07/2018
Astrophotonic Spectrograph using Arrayed Waveguide Gratings

- | | |
|--|---------|
| 42. *Invited seminar talk: Institute of Photonics and Optical Science, Univ of Sydney
On-chip Astrophotonic Spectrographs | 07/2018 |
| 43. Contributed talk: The 5th Annual DC/MD/VA Space Science Summer Meeting
The tale of an astrophotonic spectrometer | 07/2017 |
| 44. Afternoon talk: Institute of Photonics and Optical Science, Univ of Sydney
On-chip Astrophotonic Spectrographs | 07/2018 |
| 45. *Invited seminar talk: Dept of Physics, Univ of Virgin Islands
Arrayed Waveguide Gratings as astrophotonic spectrographs | 09/2017 |
| 46. *Invited Colloquium: Aryabhata Research Institute of Observational Sciences, Nainital, India
Astrophotonics: A new paradigm for astronomical instrumentation | 07/2016 |
| 47. Contributed talk: 6th Biomedical Engineering International Conference
Development of piezo-electric sensor based noninvasive low cost Arterial Pulse Analyzer | 10/2013 |
| 48. Contributed talk: International Radar Symposium, Bangalore India | 12/2013 |

POSTER PRESENTATIONS

- | | |
|--|---------|
| 1. SPIE Astronomical Telescopes + Instrumentation, Virtual | 12/2020 |
| 2. 236th Meeting of the American Astronomical Society | 06/2020 |
| 3. 7th Annual GMT Community Science Meeting, Carlsbad, CA | 09/2019 |
| 4. 233rd Meeting of the American Astronomical Society, Seattle, WA | 01/2019 |
| 5. SPIE Astronomical Telescopes + Instrumentation, Austin, TX | 07/2018 |
| 6. 231st Meeting of the American Astronomical Society, Washington DC | 01/2018 |
| 7. SPIE Astronomical Telescopes + Instrumentation, Edinburgh, UK | 07/2016 |
| 8. SPIE Optics + Photonics, San Diego, CA | 08/2018 |

Publication List

Total Citations: 1613

FIRST-AUTHOR / SIGNIFICANT CONTRIBUTIONS

1. **P. Gatkine** et al. *Efficient ultra-broadband low-resolution astrophotonic spectrographs*, Optics Express, Submitted 2024
2. N. Jovanovic, **P. Gatkine** et al. *2023 Astrophotonics Roadmap: pathways to realizing multi-functional integrated astrophotonic instruments*, Journal of Physics Photonics, 5, 042501 (2023) [Link](#)
** A global comprehensive effort (invited) led by Jovanovic and **Gatkine** with 25 chapters showcasing the latest developments in all aspects of Astrophotonics and the challenges to be resolved.
3. N. Jovanovic, **P. Gatkine** et al. *Flattening laser frequency comb spectra with a high dynamic range, broadband spectral shaper on-a-chip*, Optics Express, 30(20):36745-36760 (2022), [Link](#)
4. **P. Gatkine** et al. *The CGM-GRB Study II: Outflow-Galaxy Connection at $z \sim 2-6$* , The Astrophysical Journal, 926, 63, 2022, [Paper Link](#)
5. **P. Gatkine** et al. *Potential of commercial SiN MPW platforms for developing mid/high-resolution integrated photonic spectrographs for astronomy*, Applied Optics, 60(19), D15-D32, (2021) [arXiv](#) / [Journal](#)
6. **P. Gatkine**, S. Vogel, S. Veilleux, *New Radio constraints on the obscured star formation rates of massive GRB hosts at $z \sim 2-3.5$* , The Astrophysical Journal, 897, 2020, p 1-9 [arXiv Link](#)
7. **P. Gatkine**, S. Veilleux, A. Cucchiara, *The CGM-GRB Study I. Uncovering The CircumGalactic Medium around GRB hosts at redshifts 2-6*, The Astrophysical Journal, 884 66, 2019, p 1-42 [arXiv Link](#)
8. **P. Gatkine**, S. Veilleux, M. Dagenais, *Astrophotonic Spectrographs*, Applied Sciences, 9(2):290-307 (2019) [arXiv Link](#)
9. **P. Gatkine** et al. *Arrayed waveguide grating spectrometers for astronomical applications: New results*, Optics Express, 25(15):17918-17935 (2017) [arXiv Link](#)
10. Y. Hu, Y. Zhang, **P. Gatkine** et al. *Characterization of low-loss waveguides using Bragg gratings*, IEEE Journal of Selected Topics in Quantum Electronics, 24(4):1-8 (2018) [Paper Link](#)
11. T. Zhu, Y. Hu, **P. Gatkine** et al. *Arbitrary on-chip optical filter using complex waveguide Bragg gratings*, Applied Physics Letters, 108 (101104):1-5 (2016). [Paper Link](#)
12. T. Zhu, Y. Hu, **P. Gatkine** et al. *Ultrabroadband high-coupling-efficiency fiber-to-waveguide coupler using Si_3N_4/SiO_2 waveguides on Silicon*, IEEE Photonics Journal, 8(5):1-12 (2016) [Paper Link](#)
13. **P. Gatkine**, B. Kumar, *Dynamical modeling and resonance frequency analysis of 3.6 m optical telescope pier*, International Journal of Structural & Civil Engg. Research, 3(1):1-12 (2014) [Paper Link](#)

Instrumentation Conference Full Papers (* = Student mentored)

14. G. Sercel*, **P. Gatkine** et al. *Thermal control of long delay lines in a high-resolution astrophotonic spectrograph*, Proceedings of SPIE Volume 12889, article ID 12889-91, 2024, page 1-8
15. Y. Zhang, **P. Gatkine** et al. *High Throughput Arrayed Waveguide Grating with Resolving Power over 100,000*, IEEE Photonics Conference, Orlando, FL, USA, 2023, pp. 1-2 [Link](#)
16. Y. Zhang, **P. Gatkine** et al. *High resolving power and highly compact arrayed waveguide grating with reusable delay lines (RDL-AWG)*, IEEE Silicon Photonics Conference, Washington, DC, USA, 2023, pp. 1-2 [Link](#)

17. **P. Gatkine** et al. *A continuously-sampled high-resolution astrophotonic spectrograph using Silicon Nitride*, Proceedings of SPIE Volume 12188, article ID 121882D, 2022, page 1-10 [Paper Link](#)
18. Y. Zhang, W. Hsu, **P. Gatkine** et al. *High Resolving Power Arrayed Waveguide Grating with Spiral Reusable Delay Lines (SRDL-AWG)*, Conference on Lasers and Electro-Optics 2023, Technical Digest Series (Optica Publishing Group), paper SW30.4. [Link](#)
19. **P. Gatkine** et al. *A Near-infrared, on-chip Astrophotonic Spectrograph with a Resolving Power of 40,000*, Conference on Lasers and Electro-Optics 2023, [Link](#)
20. N. Jovanovic, **P. Gatkine** et al. *An all-photonic, dynamic device for flattening the spectrum of a laser frequency comb for precise calibration of radial velocity measurements*, Proceedings of SPIE Volume 12188, article ID 121885D, 2022, page 1-7 [Paper Link](#)
****Best Poster Award** at SPIE Astronomical Instruments + Telescopes, 2022
21. **M. Perez***, **P. Gatkine** et al. *Simulating the study of exoplanets using photonic spectrographs*, Proc. SPIE Volume 12008, article ID 120080C, 2022, page 1-13 [arXiv Link](#)
22. **P. Gatkine** et al. *An on-chip astrophotonic spectrograph with a resolving power of 12,000*, Proceedings of SPIE Volume 11819, article ID 118190I, 2021, page 1-10 [Paper Link](#)
23. **P. Gatkine**, **Meghna Sitaram***, et al. *Development of an integrated near-IR astrophotonic spectrograph*, Proceedings of SPIE Volume 11451, article ID 114516L, 2020, page 1-7 [Paper Link](#)
24. **P. Gatkine** et al. *Towards a multi-input astrophotonic AWG spectrograph*, Proceedings of SPIE Volume 10706, article ID 1070656, 2018, page 1-8 [arXiv Link](#)
25. Y. Hu, Y. Zhang, **P. Gatkine** et al. *An efficient approach to characterize low-loss waveguides using Bragg gratings*, Conference on Lasers and Electro-Optics, OSA, paper JW2A.65 (2018) [Paper Link](#)
26. **P. Gatkine**, **G. Zimmerman***, E. Warner *A do-it-yourself spectrograph kit for educational outreach in optics and photonics*, Proceedings of SPIE Volume 10741, article ID 107410S, 2018, page 1-7 [arXiv Link](#)
27. **P. Gatkine** et al. *Development of high-resolution arrayed waveguide grating spectrometers for astronomical applications: first results*, Proc. of SPIE Volume 9912, article ID 991271, 2016, p 1-12 [arXiv](#)
****Best Student Presentation Award** at SPIE Astronomical Instruments + Telescopes, 2016
28. **P. Gatkine**, K. P. Ray, *New method for asteroid shape detection using spherical segmentation based delay-Doppler analysis*, International Radar Symposium, India 2013 [Paper Link](#)
29. **P. Gatkine** et al. *Development of piezo-electric sensor based noninvasive low cost Arterial Pulse Analyzer*, Biomedical Engineering International Conference, 2013, page 1-4 [Paper Link](#)

WHITE PAPERS (ASTRO 2020)

1. **P. Gatkine** et al. *Astro2020: Astrophotonics White Paper*, Submitted to the National Academy of Sciences for Astro 2020 Decadal Survey, Bulletin of American Astronomical Society, 51g.285G, 2019, p 1-14 [arXiv Link](#)
2. N. Jovanovic et al. (incl. **P. Gatkine**) *Enabling the next generation of scientific discoveries by embracing photonic technologies*, Submitted to the National Academy of Sciences for Astro 2020 Decadal Survey, Bulletin of American Astronomical Society, 51g.270J, 2019, p 1-16 [arXiv Link](#)
3. S. Heap, et al. (incl. **P. Gatkine**) *The Probe-class mission concept, Cosmic Evolution Through UV Surveys (CETUS)*, Submitted to the National Academy of Sciences for Astro 2020 Decadal Survey, Bulletin of American Astronomical Society, 51g.159H, 2019, p 1-15 [Paper Link](#)

PATENT APPLICATIONS

1. **P. Gatkine**, S. Balasubramanian **Granted Patent (Indian Patent No. 466943)**
An apparatus for measuring cosmic ray flux in a radiosonde telemetry system, and a method thereof
2. **P. Gatkine**, N. Jovanovic, J. Jewell, J. K. Wallace **Provisional Patent Application (CIT-9106-P)**
Drizzled Arrayed Waveguide Gratings: A novel approach to multiply the resolving power of an AWG
3. Y. Zhang, M. Dagenais, S. Veilleux, J. Zhan, **P. Gatkine** **Provisional Patent Application (63/364792)**
Arrayed Waveguide Grating with Reusable Delay Lines
4. N. Jovanovic, J. Jewell, **P. Gatkine**, et al. **US Patent Application (17/958, 097)**
Broadband All-Photonic Spectrum Flattener For Optical Frequency Combs
5. S. Noronha, S. Poojary, **P. Gatkine** **USPTO (US20190175031A1)**
Hand-based blood pressure measurement system, apparatus, and method

CO-AUTHORED PAPERS

1. N. Jovanovic et al. (incl. **P. Gatkine**) *The path to detecting extraterrestrial life with astrophotonics*, Proceedings of SPIE Volume 12680, article ID 126800G, 2023 [Paper Link](#)
2. Y. Kim et al. (incl. **P. Gatkine**) *Exploring the potential of coherent imaging using photonic lanterns with beam combiners*, Proceedings of SPIE Volume 12680, article ID 126800K, 2023 [Paper Link](#)
3. Y. Xin et al. (incl. **P. Gatkine**) *Laboratory characterization of a mode-selective photonic lantern for exoplanet characterization*, Proceedings of SPIE Volume 12680, article ID 126800I, 2023 [Paper Link](#)
4. S. Vievard et al. (incl. **P. Gatkine**) *Photonic spectro-interferometry with SCEAO/FIRST at the Subaru Telescope: towards H α imaging of protoplanets*, Proceedings of SPIE Volume 12680, article ID 126800H, 2023 [Paper Link](#)
5. J. Lin et al. (incl. **P. Gatkine**) *Demonstration of linear and neural net closed-loop control with a photonic lantern focal-plane wavefront sensor*, Proceedings of SPIE Volume 12680, article ID 126800L, 2023 [Paper Link](#)
6. J. Lin et al. (incl. **P. Gatkine**) *Experimental measurements of AO-fed photonic lantern coupling efficiencies*, Proceedings of SPIE Volume 12188, article ID 121882E, 2022, page 1-7 [Paper Link](#)
7. Y. Kim et al. (incl. **P. Gatkine**) *Spectroastrometry with photonic lanterns*, Proceedings of SPIE Volume 12184, article ID 1218449, 2022, page 1-12 [Paper Link](#)
8. B. Norris et al. (incl. **P. Gatkine**) *Demonstration of a photonic-lantern focal-plane wavefront sensor using fiber mode conversion and deep learning*, Proceedings of SPIE Volume 12185, article ID 1218530, 2022, page 1-6 [Paper Link](#)
9. J. Lin et al. (incl. **P. Gatkine**) *Exoplanet detection with photonic lanterns for focal-plane wavefront sensing and control*, Proceedings of SPIE Volume 12185, article ID 121852G, 2022, page 1-20 [Paper Link](#)
10. Y. Xin et al. (incl. **P. Gatkine**) *Efficient detection and characterization of exoplanets within the diffraction limit: vortex fiber nulling with a mode-selective photonic lantern*, The Astrophysical Journal, 938 140, 2022 [Link](#)
11. E. Hammerstein et al. (incl. **P. Gatkine**) *The Final Season Reimagined: 30 Tidal Disruption Events from the ZTF-I Survey*, ApJ, 942 9, 2023 [Link](#)
12. B. O'Connor et al. (incl. **P. Gatkine**) *A deep survey of short GRB host galaxies over $z \sim 0 - 2$: implications for offsets, redshifts, and environments*, MNRAS, 515(4) 4890, 2022 [Link](#)

13. T. Ahumada et al. (incl. **P. Gatkine**) *In search of short Gamma-ray bursts optical counterparts with the Zwicky Transient Facility*, Astrophysical Journal, 932 40, 2022 [Link](#)
14. T. Ahumada et al. (incl. **P. Gatkine**) *Discovery and confirmation of the shortest gamma-ray burst from a collapsar*, Nature Astronomy, 2021 [Link](#)
15. B. O'Connor et al. (incl. **P. Gatkine**) *A tale of two mergers: constraints on kilonova detection in two short GRBs at $z \sim 0.5$* , MNRAS 502(1) 1279, 2021 [Link](#)
16. A. Thakur et al. (incl. **P. Gatkine**) *A search for optical and near-infrared counterparts of the compact binary merger GW190814*, MNRAS, 499(3) 3868, 2020 [Link](#)
17. I. Andreoni et al. (incl. **P. Gatkine**) *GROWTH on S190814bv: Deep Synoptic Limits on the Optical/Near-Infrared Counterpart to a Neutron Star-Black Hole Merger*, ApJ 890 131, 2020 [arXiv Link](#)
18. Y. Yao et al. (incl. **P. Gatkine**) *ZTF Early Observations of Type Ia Supernovae I: Properties of the 2018 Sample*, Astrophysical Journal 886 152, 2019, [arXiv Link](#)
19. M. Kasliwal et al. (incl. **P. Gatkine**) *Kilonova Luminosity Function Constraints Based on Zwicky Transient Facility Searches for 13 Neutron Star Merger Triggers during O3*, Astrophysical Journal 905(2) 145, 2020, [arXiv Link](#)
20. M. Coughlin et al. (incl. **P. Gatkine**) *GROWTH on GW190425: Searching thousands of square degrees to identify an optical or infrared counterpart to a binary neutron star merger with the Zwicky Transient Facility and Palomar Gattini IR* Astrophysical Journal Letters, 885 L19, 2019 [arXiv Link](#)
21. I. Andreoni et al. (incl. **P. Gatkine**) *GROWTH on S190510g: DECam observation planning and follow-Up of a distant binary neutron-star merger candidate*, Astrophysical Journal Letters, 881 L16, 2019, page 1-11 [arXiv Link](#)
22. D. Goldstein et al. (incl. **P. Gatkine**) *GROWTH on S190426c. II. Real-Time search for a counterpart to the probable neutron star-black hole merger using an automated difference imaging pipeline for DECam*, Astrophysical Journal Letters, 881 L7, 2019, page 1-9 [arXiv Link](#)
23. T. Hung et al. (incl. **P. Gatkine**) *Discovery of highly blueshifted broad Balmer and metastable Helium absorption lines in a tidal disruption event*, Astrophysical Journal, 879 119, 2019, p 1-17 [arXiv Link](#)
24. E. Troja et al. (incl. **P. Gatkine**) *A luminous blue kilonova and an off-axis jet from a compact binary merger at $z = 0.1341$* , Nature Communications, 9, 4089, 2018, page 1-10 [arXiv Link](#)
25. R. Lunnan et al. (incl. **P. Gatkine**) *A UV resonance line echo from a shell around a hydrogen-poor superluminous supernova*, Nature Astronomy, 2:887-895 (2018) [arXiv Link](#)
26. R. Lynch et al. (incl. **P. Gatkine**) *The Green Bank North Celestial Cap Pulsar Survey. III. 45 New Pulsar Timing Solutions* The Astrophysical Journal, 859(2), 93, 2018, page 1-19 [arXiv Link](#)
27. Clarke, J. D. A., et al. (incl. **P. Gatkine**) *Field robotics, astrobiology and Mars analogue research on the Arkaroola Mars Robot Challenge Expedition*, Proceedings of the 14th Australian Space Research Conference, 2014 [Link](#)

ASTRONOMICAL CIRCULARS

1. S. Dichiara et al. (incl. **P. Gatkine**) *GRB 200826A: Lowell Discovery Telescope observations of ZTF20abwysqy*, 2020, GCN 28312.1D
2. R. Stein et al. (incl. **P. Gatkine**) *LIGO/Virgo S190910h: Four additional candidates from the Zwicky Transient Facility*, 2019, GCN 25727.1S

3. R. Stein et al. (incl. **P. Gatkine**) *LIGO/Virgo S190910h: Candidates from the Zwicky Transient Facility*, 2019, GCN 25722.1S
4. S. Anand et al. (incl. **P. Gatkine**) *LIGO/Virgo S190910d: Candidates from the Zwicky Transient Facility*, 2019, GCN 25706.1A
5. R. Stein et al. (incl. **P. Gatkine**) *LIGO/Virgo S190901ap: Additional candidates from the Zwicky Transient Facility*, 2019, GCN 25656.1S
6. R. Stein et al. (incl. **P. Gatkine**) *LIGO/Virgo S190901ap: Additional observations from the Zwicky Transient Facility*, 2019, GCN 25634.1S
7. E. Kool, et al. (incl. **P. Gatkine**) *LIGO/Virgo S190901ap: Candidates from the Zwicky Transient Facility*, 2019, GCN 25616.1K
8. D. A. Goldstein et al. (incl. **P. Gatkine**) *LIGO/Virgo S190814bv: Additional candidates identified in DECam images by the DECam-GROWTH team*, 2019, GCN 25393.1G
9. D. A. Goldstein et al. (incl. **P. Gatkine**) *LIGO/Virgo S190814bv: Prioritization of Counterpart Candidates based on a Photometric Redshift Analysis by the DECam-GROWTH Team*, 2019, 25391.1G
10. S. Dichiara et al. (incl. **P. Gatkine**) *LIGO/Virgo S190814bv: No candidates from DCT galaxy targeted search and observations of DECam-GROWTH candidates*, 2019, GCN 25374.1D
11. S. van Velzen et al. (incl. **P. Gatkine**) *Classification of AT2019azh as an Eddington-limited tidal disruption flare*, 2019, ATel 12568.1V
12. I. Andreoni et al. (incl. **P. Gatkine**) *LIGO/Virgo S190510g: Optical Counterpart Candidates from DECam-GROWTH*, 2019, GCN 24467.1A
13. S. B. Cenko et al. (incl. **P. Gatkine**) *LIGO/Virgo S190426c: Discovery Channel Telescope Follow-Up of ZTF19aassfws*, 2019, GCN 24430.1C
14. M. Coughlin et al. (incl. **P. Gatkine**) *LIGO/Virgo S190426c: Optical Wide-field Search with the Zwicky Transient Facility*, 2019, GCN 24283.1C
15. S. Dichiara et al. **P. Gatkine** et al. *LIGO/Virgo S190425z: DCT ZTF19aarykkb spectroscopy*, 2019, GCN 24220.1D
16. S. Dichiara, **P. Gatkine** et al. *GRB 190106A: DCT observations*, 2019, GCN 23744.1D
17. S. B. Cenko et al. **P. Gatkine** et al. *GRB180715B: Zwicky Transient Facility Follow-Up of a Fermi Short GRB (Trigger 553369644)*, 2018, 22969.1C