Aafaque R. Khan

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EDUCATION

- **Ph.D.**, Astronomy and Astrophysics, 2020-Present (Expected Spring 2026)
- **M.S.**, Astronomy and Astrophysics, 2020-2024
  Steward Observatory, University of Arizona, Tucson, AZ
  Advisor: Dr. Erika T. Hamden
- **M.S**, Optical Sciences, 2019-Present (Expected Spring 2026)
  Wyant College of Optical Sciences, University of Arizona, Tucson, AZ
- **Post-Graduate Certificate**, Liberal studies, 2013-2014
  Young India Fellowship, IFRE/Ashoka University, New Delhi, India
- **B. Tech.**, Mechanical Engineering, 2009-2013
  Maulana Azad National Institute of Technology, Bhopal, India

PROFESSIONAL EXPERIENCES

- **Graduate Research Assistant, Hamden Detector Lab, 2019-Present**
  Steward Observatory, University of Arizona, Tucson, USA

  Academic Visits, Appointments, and Collaborations:

  - Visiting Researcher, Laboratory of Astrophysics, Marseille (Summer 2019)
  - Pre-doctoral Fellow, Center for Astrophysics, Harvard-Smithsonian (2021-2023)
  - Researcher, NASA Jet Propulsion Laboratory of Astrophysics, Pasadena (Fall 2023)
  - FIREBall-2 spectrograph integration: Columbia University, New York (2020-22), California Institute of Technology, Pasadena (2023-24)

- **Graduate Teaching Assistant, Fall 2024 & Fall 2025**
  Steward Observatory, University of Arizona, Tucson, USA
- **Lead Engineer, Solar Ultra-violet Imaging Telescope (SUIT) on Aditya-L1 Spacecraft, 2015-2019**
  Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India
  SUIT is a near-UV imaging telescope (200-400 nm) aboard the Aditya-L1 mission (Launched in Sep. 2023) studying solar chromospheric dynamics, magnetic field evolution, and coronal heating mechanisms from the Sun-Earth L1 Lagrange point. It provides continuous high-resolution solar atmospheric imaging for space weather and solar variability studies. (PI: Durgesh Tripathi, Instrument PI: A. N. Ramaprakash)

- *Leadership:* Led cross-functional teams across IUCAA and multiple ISRO centers through the full payload development cycle from concept to Critical Design Review.
- *Systems engineering:* Developed payload requirements, interface control documents, technical budgets, and risks through the development cycle. Interfacing with spacecraft and launch vehicle teams on requirements flow and mission analysis.
- *Project Management:* Maintaining the project timeline, budget, and contracts. Procurement and management of export-controlled hardware.
- *Test Facility Development:* Class 100 UV payload integration cleanroom facility at Space Science Integration Facility (SSIF), ISRO. Developed contamination control and measurement techniques for UV optics and cryogenic detectors.
- *Assembly, Integration & test plans:* Designed the vacuum calibration and testing setup, developed radiation, environmental testing, and TVAC plan and procedures for components and payload.

- **Ashoka Research and Teaching Fellowship, Fall 2014**
  Ashoka University, Sonepat, Haryana, India

CURRENT RESEARCH

- **Noise characterization & optimisation of single-photon counting UV detectors**
  Collaboration: University of Arizona, NASA-JPL Microdevices Laboratory (MDL)
  - Investigating the fundamental noise properties of silicon detectors using photon-counting EMCCDs supported by Roman Technology Fellowship. PI: Erika Hamden
  - Development of a Vacuum UV (VUV) monochromator setup and cleanroom for Quantum Efficiency (QE) characterization of detectors. PI: Erika Hamden
  - Development of an EMCCD camera setup with independent temperature control of the detector and its surroundings, supported by JPL-Strategic University Partnership (SURP) grant. PI: Shouleh Nikzad (JPL), Erika Hamden (UArizona)
  - Quantum Efficiency characterization of delta-doped EMCCD detectors with spatially patterned ALD coatings for applications in UV spectroscopy, PI: April Jewell (JPL)

- **NASA Aspera SmallSat**
  Aspera is a NASA Astrophysics Pioneers SmallSat Mission that carries twin Far-UV spectrographs for mapping emission from OVI coronal gas in nearby edge-on galaxies ($20M, PI: Dr. Carlos Vargas, Deputy PI: Dr. Erika Hamden).
  - Co-Investigator & Science team member
  - Lead of the optical alignment, integration, and verification FUV spectrographs
  - Lead of the preflight and in-orbit performance calibration of the spectrographs
  - Co-lead for characterization and testing of flight Microchannel Plate detectors
  - Optical design and integration of the Vacuum UV collimator setup

- Lead, Extended mission concept: Mapping CGM emissions from Large Magellanic Cloud and Milky Way interface region
- Member, Contamination Control, and Mission Operations working groups

- **Faint Intergalactic Redshifted Emission Balloon (FIREBall-2)**
  FIREBall-2 is a balloon-borne sub-orbital telescope with a multi-object spectrograph (MOS) designed to measure the faint emission from the Intergalactic Medium. Jointly funded by NASA and the National Centre for Space Studies (CNES), France. (PI: Chris Martin, Caltech, Institute PI: Erika Hamden, UArizona)
  Collaboration: Caltech-JPL, Columbia University, Laboratory of Astrophysics Marseille, University of Iowa, NASA, CNES
  - Optical alignment and throughput measurement of spectrograph at Laboratory of Astrophysics, Marseille (Summer 2019)
  - Straylight analysis of MOS in Zemax OpticStudio (2021-2022)
  - Optical alignment and implementation of straylight baffles at Columbia University (CU), New York (2020–22)
  - Optical metrology and alignment of Focal Corrector Assembly (FCA) using Computer-generated Holograms and Laser Interferometry at UA (2023-24)
  - Integration of the FCA into the spectragraph and optical meteorology at CU (2020–22), UA (2023), Caltech (2023-24)

- **NUV Observations of Transients with the NUTRANS System**
  NUTRANS (Near-Ultraviolet Transient Survey) is a 3-year National Science Foundation-funded research program developing ground-based near-UV astronomy capabilities for supernova and transient observations using UV-optimized cameras, providing critical follow-up observations and training undergraduate and graduate students. (PI: Peter Milne, Erika Hamden)
  - Selection and procurement of a 2k×2k CCD detector with NUV optimized-coatings
  - Optimisation of the NUTRANS telescope optical design for the new 2k×2k camera.
  - Guide students and staff in developing the camera control software
  - Guide students on design, fabrication, and assembly of the camera vacuum enclosure.
  - Bench testing the camera setup before integration into the telescope.

PAST RESEARCH

- **Solar Ultraviolet Imaging Telescope (SUIT) on-board Aditya-L1**
  - Developing the instrument simulator for exposure time estimation, on-board operations, and contamination degradation modelling with science team
  - Developed the science cases, established science requirements, and translated them to instrument performance requirements

- Lead the R&D efforts for the optical, optomechanical systems, straylight suppression baffles, and interferometric alignment process for the payload.
- Developed the mechanical and thermal design for the flight CCD camera in collaboration with the thermal team at ISRO
- Established the space qualification process for flight detectors in collaboration with e2V (now Teledyne-e2V)
- Lead the development and space qualification of custom thermal filters and science filters, shutter and filter wheel mechanisms & UV LEDs for on-board calibration.
- Created the flight software and algorithms architecture, Python implementations of on-board flare detection and trigger algorithms for automated on-board operations.

- **Azad-1 Student Satellite Project (2012-2014)**
  Azad-1 was a student-led undergraduate cubesat concept designed to demonstrate the technology of an Extreme Ultraviolet (EUV) solar imaging telescope on a cubesat platform.
  - *Project founder and lead:* 40-member undergraduate team.
  - *Payload lead:* Developed the sience case for multi-wavelength EUV Solar Imager
  - *Payload Systems Engineer:* Optical & mechanical design of Ritchey-Cretin telescope
  - Design of normal incidence multilayer coatings for EUV mirrors
  - Selection of back-thinned CMOS detector and coatings for EUV Camera.
  - Preliminary mechanical and thermal design and FEM analysis

TEACHING

Undergraduate:

- **Graduate Teaching Assistant**, Steward Observatory, University of Arizona,
  Observational Astronomy with Dr. Dennis Zaritsky, Fall 2025 (18 students)
  Observational Astronomy with Dr. Peter Milne, Fall 2024 (21 students)
- **Ashoka Research and Teaching Fellowship**, Ashoka University
  Philosophy of Science with Dr. Neerja Shankaran, Fall 2014 (20 students)
  Introduction to Mathematical Thinking with Dr. Maya Saran, Fall 2014 (15 students)

Graduate:

- **Ashoka Graduate Teaching Assistant**, Ashoka University
  Foundations of Leadership with Dr. Dwight Jaggard, Summer 2014, Young India Fellowship, Ashoka University, (TA and coach for 40 fellows in a class of 200)
- **Ashoka Experiential Learning Module**, Ashoka University,
  Industry mentor/instructor for a team of students at Young India Fellowship, Fall 2017 & Spring 2018, Ashoka University (Team of 3 fellows)

ADVISING AND MENTORING

- *Mentoring undergraduate research students and staff at Hamden Lab:*
  - Ipek Kerkeser, Undergraduate Student, Technical Research Assistant (2022-2025)
    Now a doctoral student at Caltech
  - Jacob Vider, Post-Bac Student, Technical Research Assistant (2022-2024)
    Now a doctoral student at the University of Maryland
  - Harrison Bradley, Undergraduate Student, Technical Research Assistant (2021-23, 2025)
    Now a doctoral student at the Wyant College of Optical Sciences, UArizona
  - Olivia Jones, Undergraduate student, University of Arizona (2021-22)
    Now a doctoral student at the University of Iowa
  - Alex Romero-Lozano, Undergraduate Student, University of Arizona
- *Mentored 8 Young India Fellows spanning over a decade through the YIF Alumni mentorship programme and Experiential Learning Module: Details on request*

ACADEMIC SERVICE & PROFESSIONAL ACTIVITIES

- **Reviewer**, Journal of Astronomical Telescopes, Instruments, and Systems, 2025
- **Reviewer**, Journal of Optical Engineering, 2025
- **Panelist and Interviewer for Graduate Admissions**, Young India Fellowship, Ashoka Univeristy, 2022-2025
- **Chairperson and Instructor**, Practical Optics Workshop, a graduate student-run workshop for training and teaching optical design and analysis software at Wyant College of Optical Sciences, UArizona, 2021-2024
- **Facilitator**, Teen Astronomy Café educational program, run by the National Science Foundation's National Optical-Infrared Astronomy Research Laboratory, introduces high-school students to programming by exercises in analyzing real science data.
- **Exhibit designer and Volunteer**, Laser Fun Day, Public open house outreach event at the Wyant College of Optical Sciences, UArizona, 2019, 2023
- **Director, Administration**, Ashoka University Alumni Association, 2015-16
- **Executive Co-secretary** (2011-2013) & **National Point of Contact-India** (2013-2015), Space Generation Advisory Council, Vienna, Austria (Remote)

GRANTS, AWARDS, AND HONORS

- Co-Investigator, Aspera SmallSat, NASA Astrophysics Pioneers Mission, NASA (2022) **($20M, PI: Carlos Vargas)**
- Co-Investigator, Jet Propulsion Laboratory–University of Arizona, Strategic University Partnership Grant, JPL (2021) **($65k, PI: Shouleh Nikzad)**
- Future Investigator, Future Investigators in NASA Earth and Space Science and Technology (FINESST), NASA (2021–2024) **($135k, PI: Erika Hamden)**

- Emerging Space Leaders Award, International Astronautical Federation (IAF) (2012)
- Selected Panelist for the Next Generation Plenary moderated by Bill Nye at the International Astronautical Congress (IAC), Naples, IT (2012)
- Developing Countries Support Grant, IAF, European Space Agency, and United Nations Office for Outer Space Affairs to attend IAC, Cape Town, SA (2011)
- Full Tuition Scholarship for Young India Fellowship Programme, International Foundation for Research in Education/Ashoka University, New Delhi (2013-14)
- Full Undergraduate Scholarship for Bachelor of Technology program at MANIT, Bhopal, Ministry of Minority Affairs, Government of India (2009-2013)

SKILLS

- **Optical Design, Analysis & testing:** Ansys Zemax Opticstudio, Synopsys Code V, Synopsis Light Tools, Zygo MetrorPro Mx, Laser Interferometers, White light Interferometer, 3D optical profiler, Computer Generated Holograms;
- **Programming:** High-Performance Computing (HPC), Slurm, MPI, Git, AI/ML Workflows, Google Cloud Compute, R, C, MATLAB, Mathematica, HTML, CSS, JS, React;
- **Mechanical Design (CAD) and FEM Software:** Solidworks CAD and Simulation, NX Nastran Structural, Ansys, Autodesk Inventor, Autodesk Mechanical Simulation

PATENTS

1. **Aafaque R. Khan**, Daewook Kim, "Systems for optimizing optical cavities for photoevaporation", Utility - Non-provisional application under 35 USC 111(a), 2025 (Pending in Review)

SELECTED TECHNICAL PRESENTATIONS

1. *Ultraviolet Emission Mapping of Multiphase Halo Gas with NASA's Aspera SmallSat Mission and the Mileva Constellation*
   Aafaque R. Khan, Monday Afternoon Talks, Massachusetts Institute of Technology Kavli Institute for Astrophysics and Space Research,
   Cambridge, February 2026 (Invited Talk)
2. *Astrophysics SmallSat mission and Constellations: Mapping the Diffuse Universe in the Far-Ultraviolet*
   Aafaque R. Khan, Arionza Photonics Day, Arizona Technology Council,
   Tucson, February 2026 (Invited Talk)
3. *Ultraviolet Emission Mapping of Multiphase Halo Gas with NASA's Aspera SmallSat Mission and the Mileva Constellation*
   Aafaque R. Khan, Low Density Universe Meeting, Space Telescope Science Institute,
   Baltimore, December 2025 (Invited Talk)

4. *Mapping the Diffuse Ultraviolet Universe with NASA's Aspera Mission and Advancing UV Detector Technologies*
   Aafaque R. Khan, Special Astronomy Seminar, California Institute of Technology, Pasadena, November 2025 (Invited Talk)
5. *Aspera SmallSat: A spirited Ultraviolet mission to map the ghostly gas around galaxies.*
   Aafaque R. Khan, Astrophysics and Planetary Scienes Friday Lunch Seminar, University of Colorado, Boulder, 31st October 2025 (Invited Talk)
6. *Mileva: Multi-spectral FUV mapping of LMC-MW CGM Interface*
   Aafaque R. Khan, Steward Observatory Internal Symposium, 2025 (Contributed Talk)
7. *Extended mission concept for Aspera SmallSat: Mapping OVI emission from the CGM of the Large Magellanic Cloud*
   Aafaque R. Khan, Bulletin of the AAS, 57(2), 2025 (Contributed Talk)
8. *Mileva: Multi-spectral FUV mapping of LMC-MW CGM Interface*
   Aafaque R. Khan, Steward Observatory Internal Symposium, 2025 (Contributed Talk)
9. *Extended mission concept for Aspera SmallSat: Mapping OVI emission from the CGM of the Large Magellanic Cloud*
   Aafaque R. Khan, Bulletin of the AAS, 57(2), 2025 (Contributed Talk)
10. *Mileva: Multi-spectral FUV mapping of LMC-MW CGM Interface*
    Aafaque R. Khan, Steward Observatory Internal Symposium, 2025 (Contributed Talk)
11. *Detection and Emission Mapping of the Warm-hot Circumgalactic Medium with the Aspera Pioneers Mission*
    Aafaque R. Khan, C. Vargas, & Team Aspera, Bulletin of the AAS, 55(6), 2024 (Conference Presentation)
12. *Overview of the ground and onboard calibration for Aspera SmallSat*
    Aafaque R. Khan, C. Vargas, & Team Aspera, Bulletin of the AAS, 55(6), 2023 (Contributed Talk)
13. *The Aspera Pioneers Mission*
    Aafaque R. Khan, Carlos Vargas for the Aspera Team, NASA UV/Vis and CubeSat/Pioneers PIs Annual Program Review, November 2024 (Invited Talk)
14. *Aspera final design and mission updates*
    Aafaque R. Khan, Carlos Vargas for the Aspera Team, NASA UV/Vis and CubeSat/Pioneers PIs Annual Program Review, November 2023 (Invited Talk)
15. *Mapping the CGM with Aspera*
    Aafaque R. Khan, Carlos Vargas for the Aspera Team, UV Science and Instrumentation Workshop: On the Way to the NASA Habitable Worlds Observatory and Beyond, NASA JPL, Pasadena, USA, 2024 (Poster)
16. *Advancing ultraviolet detector technology for future missions: investigating the dark current plateau in silicon detectors using photon-counting EMCCDs*

Aafaque R. Khan, Substitute speaker: Erika Hamden, Space Telescopes and Instrumentation 2024: Ultraviolet to Gamma Ray, SPIE Astronomical Telescopes + Instrumentation, Nayoga, Japan, 2024 (Contributed Talk)

17. *Optical alignment of contamination-sensitive far-ultraviolet spectrographs for Aspera SmallSat mission*, Aafaque R. Khan presented by Hauen Chung, SPIE AI&T, Nayoga, Japan, 2024 (Contributed Talk)
18. *An overview of the on-ground and in-orbit calibration of Far-Ultraviolet Spectrographs for the Aspera SmallSat* Aafaque R. Khan, Substitute speaker: Carlos Vargas, Space Telescopes and Instrumentation 2024: Ultraviolet to Gamma Ray, SPIE Astronomical Telescopes + Instrumentation, Nayoga, Japan, 2024 (Poster)
19. *Mapping the Emission from the CGM of Large Magellanic Cloud with SmallSats: Aspera Extended Mission Concept and Beyond*
    Aafaque R. Khan, Friday Lunch Astrophysics Seminar Hour (FLASH) Talks, NSF NOIRLab, April 2025 (Seminar)
20. *Challenging optical alignments made easy with Computer-Generated Holograms (CGH): An overview of CGH-based alignment schemes for Aspera and FIREBall-2*
    Arizona Photonics Day, Optics Valley, Arizona Technology Council, 2023 (Contributed Talk)
21. *Big Science with Small Satellites: Uncovering the Cosmic Collision Between Milky Way and Large Magellanic Cloud with Aspera Extended Mission and Beyond*
    Aafaque R. Khan, Arizona Space Institute (ASI) Symposium, UArizona, 2025 (Contributed Talk)
22. *Assembly, Integration, and Testing Progress of Aspera Smallsat*
    Aafaque R. Khan, Steward Observatory Internal Symposium, 2024 (Contributed Talk)
23. *The Solar Ultraviolet Imaging Telescope onboard Aditya-L1*
    Aafaque R. Khan on behalf of SUIT team, Space Telescopes and Instrumentation 2016: Ultraviolet to Gamma Ray, SPIE Astronomical Telescopes + Instrumentation, Edinburgh, Scotland, U.K., 2016. (Contributed Talk)
24. *Overview of the Solar Ultraviolet Imaging Telescope*
    Aafaque R. Khan, SUIT Science meeting, Udaipur Solar Observatory, Physical Research Laboratory, Udaipur, India, 2015 (Invited Talk)
25. *The Solar Ultraviolet Imaging Telescope: Preliminary Payload Design Review*
    Aafaque R. Khan for the SUIT team, Aditya-L1 Payloads, Preliminary Design Review, ISRO Space Application Center, Bangalore, India, 2017 (Invited Talk)

SELECTED PUBLIC TALKS AND OUTREACH

1. *Community Engagement and Outreach for ASPERA SmallSat Project at University of Arizona President's Club Open House Event*
   Steward Observatory, Tucson, Arizona, Oct 2025

2. *Big Science with Small Satellites: Mapping the Cosmic Collision of the Milky Way with the Large Magellanic Cloud*
   Astronomy on Tap Tucson, Space Drafts #105, Tucson, Arizona, March 2025
3. *A Trial by Sun's Fire: Designing a Telescope to Study the Solar Atmosphere with India's First Solar Space Observatory*
   Astronomy on Tap Tucson, Space Drafts #95, Tucson, Arizona, February 2024
4. *Organizer, Aryabhat Astronomy Quiz Guest Lecture by Dr. Carlos Vargas*
   Aryabhat Founation, Bhopal, India, 2024 (Remote)
5. *Flying Space Balloon: A Beginner's Guide to Astronomy from the Stratosphere*
   Astronomy on Tap Tucson #85, Space Drafts, Tucson, Arizona, March 2023
6. *Dreaming About the Night Sky: Astronomy in Poetry and Prose*
   Astronomy on Tap Tucson #82, Space Drafts, Tucson, Arizona, November 2022
7. *Organizer, Aryabhat Astronomy Quiz Guest Lecture by Dr. Erika Hamden*
   Aryabhat Founation, Bhopal, India, 2020 (Remote)
8. *Exhibit Designer and Presenter, Augmented Reality Sandbox*
   Laser Fun Day, College of Optical Sciences Outreach (OSC Outreach), University of Arizona, Tucson, Arizona, April 2019
9. *Organizing Committee Member, National Science Day Open House*
   SciPop at Inter-University Centre for Astronomy and Astrophysics, Pune, India, 2015–2018
10. *Organizer and Quiz Master, National Science Day Inter-School Science Quiz*
    SciPop at Inter-University Centre for Astronomy and Astrophysics, Pune, India, 2017

PUBLICATIONS (See ORCID profile)

1. **Aafaque R. Khan**, Carlos Vargas, Erika Hamden, Haeun Chung, Daniel Turong, Ipek Kerkesser, et. al., "The Aspera SmallSat Mission: Pre-flight performance and characterization of FUV spectrogaphs", 2025, (Journal Article, manuscript in prep)
2. **Aafaque R. Khan**, Carlos Vargas, Erika Hamden, Haeun Chung, Daniel Turong, Ipek Kerkesser, et. al., "The Aspera SmallSat Mission: Optical Alignment, Integration and Testing of Far-Ultraviolet Spectrographs", 2025, (Journal Article, manuscript in Prep)
3. **Aafaque R. Khan**, Erika Hamden, Gillian Kyne, et. al. , "Fundamental Noise properties of Silicon detectors: Ultra-dark measurements of thermal noise with UV-optimized EMCCDs", 2025 (Journal Article, manuscript in review)
4. **Aafaque R. Khan**, Erika Hamden, Gillian Kyne, et. al. , "Comprehensive detector test platform with precision thermal control for noise characterization of charge-coupled devices" *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 11, No. 4, 042204, 12 June 2025. `https://doi.org/10.1117/1.JATIS.11.4.042204` (Journal Article)

5. **Aafaque R. Khan**, Erika Hamden, "Optical alignment of contamination-sensitive far-ultraviolet spectrographs for Aspera SmallSat mission," *Proceedings of SPIE*, Vol. 13093, Space Telescopes and Instrumentation 2024: Ultraviolet to Gamma Ray, 130930A, 21 August 2024. `https://doi.org/10.1117/12.3020822` (Conference Proceeding)
6. A. Ghosh, S. Chatterjee, **A. R. Khan**, et al., "The Solar Ultraviolet Imaging Telescope onboard Aditya-L1", Proc. SPIE 9905, Space Telescopes and Instrumentation 2016: Ultraviolet to Gamma Ray, 990503, July 2016, https://doi.org/10.1117/12.2232266. (Conference Proceeding)
7. Simran Agarwal, **Aafaque R. Khan**, et. al. 'Alignment and performance verification of two-mirror focal corrector optics using computer-generated holograms for balloon-borne ultraviolet Telescope FIREBall-2, *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 11, No. 2, 025003, 20 April 2025. `https://doi.org/10.1117/1.JATIS.11.2.025003` (Journal Article)
8. Trenton Brendel, **Aafaque R. Khan**, et. al., "Balloon-borne FIREBall-2 ultraviolet spectrograph stray light control based on non-sequential reverse modeling of on-sky data," *Journal of Astronomical Telescopes, Instruments, and Systems* 8(4) 048001, 25 November 2022. (Journal Article)
9. Simran Agarwal, **Aafaque R. Khan**, et. al., "Stray Light Control for Aspera UV SmallSat Astrophysics mission: Integrated Simulation, Design, and Implementation of Optical Baffles," 2024, (Journal Article in review)
10. April D. Jewell, John Hennessy, Robin Rodríguez, Erika Hamden, and **Aafaque R. Khan**, "Advanced detector coatings for UV spectroscopy applications", Proc. SPIE UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy 2023 (Proceedings Presentation)
11. Haeun Chung, Carlos J. Vargas, Erika Hamden, Tom McMahon, Kerry Gonzales, **Aafaque R. Khan**, Simran Agarwal, et al., "Aspera: the UV SmallSat telescope to detect and map the warm-hot gas phase in nearby galaxy halos" Proc. SPIE, UV/Optical/IR Space Telescopes and Instruments: Innovative Technologies and Concepts X; 1181903 (2021). (Conference Proceeding)
12. Durgesh Tripathi, A. N. Ramaprakash, Sreejith Padinhatteeri, Janmejoy Sarkar, (et. al. including **Aafaque R. Khan**), "The Solar Ultraviolet Imaging Telescope on Board Aditya-L1," *Solar Physics*, Vol. 300, No. 3, page 30, March 2025. DOI: 10.1007/s11207-025-02423-1 (Journal Article)
13. D Tripathi, A. N. Ramaprakash, **A. R. Khan**, et al., "The Solar Ultraviolet Imaging Telescope onboard Aditya-L1", in Special Section: Astronomy, Current Science Vol. 113, No. 11, 10 December 2017. (Article)
14. S V Manoj Varma, Anurag Tyagi, Bhushan Joshi, Reena Yadav, Pravin Chordia, (et. al. including **Aafaque R. Khan**), "The Solar Ultraviolet Imaging Telescope: detector characterization and readout electronics testing", *Royal Astronomical Society Techniques and Instruments (RASTI)*, Volume 2, Issue 1, January 2023. (Journal Article)

15. Janmejoy Sarkar, Avyarthana Ghosh, Sreejith Padinhatteeri, Ravi Kesharwani, A. N. Ramaprakash, Durgesh Tripathi, (et. al. including **Aafaque R. Khan**), "Design, fabrication, and characterization of the thermal filter assembly on the Solar Ultraviolet Imaging Telescope onboard Aditya-L1," *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 11, No. 3, 034004, 29 July 2025. `https://doi.org/10.1117/1.JATIS.11.3.034004` (Journal Article)

16. Janmejoy Sarkar, Rushikesh Deogaonkar, Ravi Kesharwani, Sreejith Padinhatteeri, A. N. Ramaprakash, Durgesh Tripathi, (et. al. including **Aafaque R. Khan**), "Science filter characterization of the Solar Ultraviolet Imaging Telescope (SUIT) on board Aditya-L1", *Experimental Astronomy*, Volume 59, Number 1, Pages 3, 2024. (Journal Article)

17. Vincent Picouet, Gillian Kyne, Erika Hamden, David Valls-Gabaud, Drew M. Miles, **Aafaque R. Khan**, Zeren Lin, Shouleh Nikzad, Didier Vibert, D. Christopher Martin, "Delta-doped electron-multiplying charge-coupled device for photon-starved ultraviolet astronomy: modeling, performance, trade-offs, and prospects for future upgrades," *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 11, No. 1, 011206, 2 January 2025. `https://doi.org/10.1117/1.JATIS.11.1.011206` (Journal Article)

18. Carlos J. Vargas, Haeun Chung, Carl W. Hergenrother, **Aafaque R. Khan**, et. al. "Pioneering far UV emission mapping of the circumgalactic medium with Aspera— motivation, mission status, and lessons learned," *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 11, No. 4, 042216, 17 July 2025. `https://doi.org/10.1117/1.JATIS.11.4.042216` (Journal Article)

19. **Aafaque R. Khan**, Carl Hergenrother, Miriam Keppler, et. al. , "An overview of the on-ground and in-orbit calibration of Far-Ultraviolet Spectrographs for the Aspera SmallSat," *Proceedings of SPIE*, Vol. 13093, Space Telescopes and Instrumentation 2024: Ultraviolet to Gamma Ray, edited by Jan-Willem A. den Herder, Shouleh Nikzad, Kazuhiro Nakazawa, International Society for Optics and Photonics, page 1309333, 2024. DOI: 10.1117/12.3020385 (Conference Poster)

20. Nicole D. Melso, **Aafaque R. Khan**, Keri Hoadley, Oswald Siegmund, Adrian Martin, Dave Hamara, et. al. "Characterisation and testing of a cross-delay line microchannel plate detector for the Aspera SmallSat mission," *Proceedings of SPIE*, Vol. 13625, UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXIV, 5–7 August 2025, San Diego, California, United States. (Conference Proceedings, Manuscript Published)

21. Jessica S. Li, Nazende Ipek Kerkeser, **Aafaque R. Khan**, et. al., "FIREBall-2 UV balloon telescope in-flight calibration system," *Journal of Astronomical Telescopes, Instruments, and Systems*, Vol. 10, No. 3, 035002, 5 August 2024. (Journal Article)

22. Keri Hoadley, Erika T. Hamden, Bruno Milliard, **Aafaque R. Khan**, et al., "The FIREBall-2 UV balloon telescope: 2018 flight and improvements for 2020," Proc. SPIE 11118, UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXI, 1111815 (9 September 2019). (Conference Proceeding)