

Koothodil Abhijith Augustine

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Education

Ph.D. in Astronomy 2023 – Present

Institute of Astronomy, National Tsing Hua University, Hsinchu, Taiwan

Tentative thesis title: MeV observations of Pulsars

Advisor: Prof. Hsiang-Kuang Chang

M.Sc. in Physics 2021 – 2023

The Department of Physics, Sant Longowal Institute of Engineering and Technology, Punjab, India

Thesis title: Exploring the JWST PRIMER Catalog: An Investigation of Infrared Galaxies

Advisor: Prof. S.S. Verma and Prof. Tomo Goto

B.Sc. in Physics 2018 – 2021

The Department of Physics, University College, The University of Kerala, Kerala, India

Thesis title: Effect of Solar Flux on Aerosol Absorption Coefficient

Advisor: Prof. S. Bindu

Publications

2. D. Chatterjee, H.-K. Chang, D. Debnath, **K. A. Augustine**, and T.-H. Lin, “Investigating the Anti-Correlation between Photon Index and Flux of the Crab using RXTE and NuSTAR,” vol. 988, no. 1, 105, p. 105, Jul. 2025. DOI: 10.3847/1538-4357/ade9bd. arXiv: 2506.17899 [astro-ph. HE].
1. **K. A. Augustine** and H.-K. Chang, “Anticorrelation Between Flux and Photon Index of Hard-X-Ray Emission from the Crab,” vol. 981, no. 2, 173, p. 173, Mar. 2025. DOI: 10.3847/1538-4357/adb70e. arXiv: 2408.00406 [astro-ph.HE].

Collaborations

- **COSI** (The Compton Spectrometer and Imager): 2024–Present, **Early Career Co-Lead** of Galactic Science team, and Galactic Science team member working on Pulsars. Contributing to the **cosipy** software project by developing an pulsar timing analysis tools.
- **BTO** (The Background and Transient Observer onboard the COSI satellite): 2025–Present, Software team member. Developed a graphical user interface for data collection and ground software analysis while the instrument is in its ground-based calibration phase. Developed a parser to convert CCSDS hex to FITS format.
- **GTM** (The Gamma-ray Transients Monitor on board Formosat-8B): 2025–Present, Lead for the Crab research team, coordinating analysis efforts and meeting preparations for the mission sub-groups.

Skills

- **Languages:** English, Malayalam, Telugu, Hindi, and basic proficiency in Tamil and French.
- **Coding:** Python.
- **Astro. Software:** XSpec, MEGAlib, Fermipy, and Cosipy.
- **Misc.:** Academic research, tutoring while in school, L^AT_EX typesetting.

Presentations

10. K. A. Augustine, H.-K. Chang, D. Chatterjee, D. Debnath, and T.-H. Lin, “Anticorrelation Between Flux and Photon Index of Hard-X-Ray Emission from the Crab revealed by multiple X-ray instruments,” in The 2026 Scientific Assembly of the Astronomical Society of the Republic of China (ASROC2026), at the College of Hakka Studies at National Yang Ming Chiao Tung University in Zhubei, 2026

9. K. A. Augustine, H.-K. Chang, D. Chatterjee, D. Debnath, and T.-H. Lin, “Anticorrelation Between Flux and Photon Index of Hard-X-Ray Emission from the Crab revealed by multiple X-ray instruments,” in American Astronomical Society Meeting Abstracts, vol. 247, Jan. 2026.
8. K. A. Augustine, H.-K. Chang, D. Chatterjee, D. Debnath, and T.-H. Lin, “Anticorrelation between flux and photon index of hard-x-ray emission from the crab revealed by multiple x-ray instruments,” in 2026 Annual Meeting of the Physical Society of Taiwan, Astrophysics, Gravity and Cosmology session, National Chung Cheng University, Taiwan, 2026.
7. K. A. Augustine and H.-K. Chang, “An anti-correlation found between Photon Index and Flux in a long-term study of The Crab,” in The 2025 Scientific Assembly of the Astronomical Society of the Republic of China (ASROC2025), National Formosa University, Taiwan, 2025.
6. K. A. Augustine and H.-K. Chang, “An anti-correlation found between Photon Index and Flux in a long-term study of The Crab,” in Fermi Summer School (2025), University of Delaware Conference Center in Lewes, Delaware, 2025.
5. K. A. Augustine and H.-K. Chang, “Anticorrelation Between Flux and Photon Index of Hard-X-Ray Emission from the Crab,” in American Astronomical Society Meeting Abstracts, vol. 246, Jun. 2025, 411.09, P. 411.09.
4. K. A. Augustine, H.-K. Chang, D. Chatterjee, D. Debnath, and T.-H. Lin, “Anticorrelation Between Flux and Photon Index of Hard-X-Ray Emission from the Crab revealed by multiple X-ray instruments,” in IA Forth Seminar, Nov. 2025.
3. K. A. Augustine and H.-K. Chang, “An anti-correlation found between Photon Index and Flux in a long-term study of The Crab,” in The 2024 Scientific Assembly of the Astronomical Society of the Republic of China (ASROC2024), National Changhua University of Education, Changhua, Taiwan, 2024.
2. K. A. Augustine and H.-K. Chang, “An anti-correlation found between Photon Index and Flux in a long-term study of The Crab,” in COSI Fest, Space Science Laboratory, UC Berkeley, 2024.
1. K. A. Augustine and H.-K. Chang, “Spectral Analysis of Pulsars detected in the Swift BAT 157-Month Hard X-ray Survey,” in 2024 Annual Meeting of the Physical Society of Taiwan, Oral Contestant in Astrophysics, Gravity and Cosmology session, National Central University, Taoyuan, Taiwan, 2024.

Posters

2. **AAS 247:** Jan 05, 2026, “A cosipy Pipeline for Pulsar Timing and Phase Resolved Spectroscopy with COSI” at the 2026 Winter Meeting of the American Astronomical Society, Phoenix, AZ, USA.
1. **TPS 2025:** Jan 14, 2025, “Anti-correlation between Flux and Photon Index of Hard X-ray Emission from The Crab” at National Sun Yat-sen University, Kaohsiung, Taiwan.

Activities

- **2026 August:** AstroAI Asian Network Summer School at NTU.
- **2026 July:** Kyoto University, Visited Kyoto University to collaborate with Prof. Hiroki Yoneda.
- **2025:** Fermi Summer School, Attended the Fermi Summer School at the University of Delaware Conference Center in Lewes, Delaware.
- **2017–2023:** Seminars, Participated and organized multiple National and International Seminars during undergraduate and postgraduate studies, mostly related to multidisciplinary topics.
- **2021:** IUCAA-ISSAA, 2021, Participated in the Introduction Summer School Program conducted by the Inter-University Center for Astronomy and Astrophysics, Pune (10 May to 11 June 2021).
- **2018–2021:** WWS, Part of Walk With a Scholar (WWS), a mentoring program for undergraduate students. Attended lectures of eminent scientists from ISRO and talks by Civil Service Officers and Emeritus Professors.
- **2015–2017:** NSS, Part of the National Service Scheme (Indian government public sector service program). Participated in organ and blood donation drives, green farming, and tribal camp upliftment. Attended a 7-day camp in 2016.
- **2015:** CIGI, Calicut, Selected to represent 300 students at my higher secondary school to guide them in choosing their career. Attended a 5-day camp in The Center for Information and Guidance India (CIGI), Kozhikode, Kerala.

References

- **Prof. Hsiang-Kuang Chang**
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Email: hkchang@mx.nthu.edu.tw
URL: <http://www.phys.nthu.edu.tw/~hkchang/>
- **Prof. Amy Lien**
Department of Physics and Astronomy, University of Tampa, FL, USA.
Email: alien@ut.edu
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- **Prof. S. S. Verma**
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