Nazar Budaiev

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Education

Ph.D. in Astronomy, University of Florida — Expected 2026
M.S. in Astronomy, University of Florida — August 2022
B.A. in Astronomy and Physics, Boston University — May 2020

Research Experience

Graduate Research Assistant, University of Florida — 2020 - present
- Investigate star formation in the Galactic center with JWST, ALMA, and VLA.

Visiting Researcher, University of Connecticut — Spring 2025
- Analyzed star forming populations in the Galactic center using ALMA large survey ACES.

Research Assistant, BU Astronomy Department — 2018 - 2020
- Characterized GBT's VEGAS receiver. Modeled HI clouds in the Milky Way with IDL.

Summer Student, Green Bank Observatory — Summer 2019
- Crafted a 6 GHz continuum map of inner Galactic Plane with IDL and Python using GBT data.

Teaching Experience

Project advisor, Star Formation Group, UF — Fall 2024 - present
- Via weekly meetings advise an undergraduate student, Antonio Daley, to catalog YSOs in Sgr B2 DS with ALMA. The student received $1,750 award through UF's University Scholars Program.

Graduate student instructor, Astronomy Laboratory, UF — Fall 2020 - Spring 2021
- Taught an undergraduate non-major laboratory course. Recorded videos of labs to facilitate remote learning. Redesigned several outdated experiments.

Teaching Assistant, Stellar and Galactic Astrophysics, BU — Spring 2020
- Assisted students in an IDL programming heavy course.

Teaching Assistant, Project Accelerate, BU — Fall 2018 - Spring 2020
- Lead lab section of Advanced Placement physics course for underserved students. Developed and organized review sheets for each module of the course as a personal project.

Learning Assistant, General Physics I, BU — Fall 2017 - Spring 2018
- Facilitated students in various activities to succeed in introductory physics courses.

Awards

Various travel grants, $3,200 — 2025
ALMA Cycle 11, 6.9 hrs, PI — Summer 2024
JWST Cycle 3 GO 5365, 17.9 hrs, Co-PI — Spring 2024
Certificate of Outstanding Merit, UF International Center — Fall 2023
Symposium Talk Award, UF Astronomy — Fall 2023
Distinguished Service & Citizenship, UF Astronomy — Fall 2022
Student Observing Support (SOS) ALMA Cycle 8, **$34,955** — Fall 2021
Undergraduate Research Award, BU Astronomy — Spring 2020

Outreach and Professional Service

Referee for AAS journals — 2025
Webinar Writer, Competition Judge, AstroSandbox — 2020 - present
- Compose study materials for Ukrainian students interested in astronomy. Wrote and delivered six webinars: *Python in astronomy*, *Astronomical image processing*, *Multiwavelength astronomy*, *Radio astronomy*, *How to write a telescope proposal?*, *Imposter syndrome*.

- Judged the annual astrophysics team competition with 50 participants from 15 regions of Ukraine.

Mentor, Ukraine Global Scholars, Ukraine Achievement Fund 2020 - 2024
- Mentored four high-school students through weekly meetings to apply to world's best universities. Two students were accepted to several of the top 20 US boarding schools.

Mentor, UF Women in Astrophysics & Astronomy Mentorship Program 2022 - 2024

Mentoring committee, UF Astronomy Department 2021 - 2023
- Serve as a graduate student representative. Share anonymized students' mentoring needs with the committee. Gather students' opinions on proposed changes.

Pen Pal, Letters to a Pre-Scientist 2021 - 2022
- Correspond with a high-school student via physical mail throughout a year.

Workshops

Code/Astro, Evanston, IL July 2024

19th Synthesis Imaging Workshop, Charlottesville, VA June 2023

Star Formation School, Granada, Spain November 2021

GBT Remote Observer Certification, Green Bank Obs., WV September 2021

Single Dish School, Green Bank Obs., WV September 2021

Talks and Posters

Invited Talks

"Star formation in the Galactic center," Seminar talk. Yale, New Heaven, CT Oct 2025

"Multiwavelength mysteries in Sgr B2," TUNA talk. NRAO, Charlottesville, VA Oct 2025

"Multiwavelength mysteries in Sgr B2," Seminar talk. ESO, Germany Sep 2025

"Where are the stars in Sgr B2?" Colloquium. UConn, Storrs, CT Apr 2025

"Protostellar cores in Sgr B2," Seminar talk. Kansas University (remote) Mar 2023

Contributed Talks

"Multiwavelength mysteries in Sgr B2," Contributed talk. Stellar Origins, Austria Sep 2025

"Star formation in Sgr B2," Talk. ALMA-IMF workshop (remote) Jun 2025

"Multiwavelength mysteries in Sgr B2," Contributed talk. STScI Symposium, Baltimore May 2025

"Star formation in Sgr B2," Talk. ACES meeting, Boston, MA Aug 2024

"Protostellar cores in Sgr B2," Contributed talk. Surveying the Milky Way: The Universe in Our Own Backyard, Pasadena, CA Oct 2023

Posters

"A 500 AU resolution census of protostellar cores in the giant molecular cloud Sgr B2," Poster. PPVII, Kyoto, Japan Apr 2023

"A 500 AU resolution census of pre- and protostellar cores in the giant molecular cloud Sgr B2," Poster. From Stars to Galaxies II, Gothenburg, Sweden Jun 2022

"A 500 AU resolution census of pre- and protostellar cores in the giant molecular cloud Sgr B2," Poster. Seeing the Future, Portsmouth, NH Apr 2022

"A 6 GHz Continuum Map of the Inner Galactic Plane with the Green Bank Telescope," Poster. AAS 235th Meeting, Hawaii Jan 2020

Media Coverage

NASA press release: *NASA's Webb Explores Largest Star-Forming Cloud in Milky Way* Sep 2025

UF press release: *UF astronomers use James Webb Space Telescope to uncover hidden stars in the Milky Way's largest stellar nursery* Sep 2025

Publication List

First Author Publications

1. **Nazar Budaiev**, Adam Ginsburg, Ashley T. Barnes, Desmond Jeff, Taehwa Yoo, Cara Battersby, Alyssa Bulatek, Xing Lu, Elisabeth A. C. Mills, Daniel L. Walker. *"JWST's first view of the most vigorously star-forming cloud in the Galactic center – Sagittarius B2"*. In review in AJ (Sept. 2025). arXiv:2509.11771.

2. **Nazar Budaiev**, Adam Ginsburg, Ciriaco Goddi, Álvaro Sánchez-Monge, Anika Schmiedeke, Desmond Jeff, Peter Schilke, Christopher De Pree. *"Properties of H2O Masers and Their Associated Sources in Sagittarius B2"*. ApJ 989, 52 (Aug. 2025). 10.3847/1538-4357/adea3b.

3. **Nazar Budaiev**, Adam Ginsburg, Desmond Jeff, Ciriaco Goddi, Fanyi Meng, Álvaro Sánchez-Monge, Peter Schilke, Anika Schmiedeke, Taehwa Yoo. *"Protostellar Cores in Sagittarius B2 N and M"*. ApJ 961.1, 4 (Jan. 2024). 10.3847/1538-4357/ad0383.

Significant Contribution

4. Taehwa Yoo, Adam Ginsburg, **Nazar Budaiev**, Roberto Galván-Madrid, Aden Dawson, Savannah Gramze, Jesús Hernández, Alexandre Roman-Lopes, Carlos G. Román-Zúñiga, Joel Sanchez-Bermudez, Miriam G. Santa-Maria, Aida Wofford, and Jason E. Ybarra. *"A JWST NIRCam/MIRI view of the W51A high-mass star-forming region"*, in review in AJ (Oct. 2025).

5. T. Yoo, A. Ginsburg, J. Braine, **N. Budaiev**, F. Louvet, F. Motte, A. M. Stutz, B. Thomasson, M. Armante, M. Bonfand, S. Bontemps, L. Bronfman, G. Busquet, T. Csengeri, N. Cunningham, J. Di Francesco, D. J. Díaz-González, M. Fernández-Lopez, R. Galván-Madrid, C. Goddi, A. Gusdorf, N. Kessler, A. Koley, H. -L Liu, T. Nony, F. Olguin, P. Sanhueza, M. Valeille-Manet, L. A. Zapata, Q. Zhang. *"ALMA-IMF XX: Core fragmentation in the W51 high-mass star-forming region"*. Accepted to ApJ (Sept. 2025). arXiv:2509.06749.

6. Suinan Zhang, Xing Lu, Adam Ginsburg, **Nazar Budaiev**, Yu Cheng, Hauyu Baobab Liu, Tie Liu, Qizhou Zhang, Keping Qiu, Siyi Feng, Thushara Pillai, Xindi Tang, Elisabeth A. C. Mills, Qiuyi Luo, Shanghuo Li, Namitha Issac, Xunchuan Liu, Fengwei Xu, Jennifer Wallace, Xiaofeng Mai, Yan-Kun Zhang, Cara Battersby, Steven N. Longmore, Zhiqiang Shen. *"Subclustering and Star Formation Efficiency in Three Protoclusters in the Central Molecular Zone"*. ApJ 982.1, L10 (Mar. 2025). 10.3847/2041-8213/adb30b.

Contributing Author

7. Adam Ginsburg, Savannah R. Gramze, Matthew L. N. Ashby, Brandt A. L. Gaches, **Nazar Budaiev**, Miriam G. Santa-Maria, Alyssa Bulatek, A. T. Barnes, Desmond Jeff, Neal J. Evans II, Cara D. Battersby. *"The Colors of Ices: Measuring ice column density through photometry"*. In review in OJAp (Sept. 2025). arXiv:2510.00292.

8. Savannah Gramze, Adam Ginsburg, **Nazar Budaiev**, Alyssa Bulatek, Theo Richardson, A. T. Barnes, Miriam G. Santa-Maria, Mattia C. Sormani, Xing Lu, Francisco Nogueras-Lara, Brandt A. L. Gaches, Cara D. Battersby, Jennifer Wallace, Daniel L. Walker, Elisabeth A. C. Mills, Michael Mattern. *"Mapping CO Ice in a Star-Forming Filament in the 3 kpc Arm with JWST"*. In review in OJAp (Sept. 2025). arXiv:2509.21763.

9. Fengwei Xu, Xing Lu, Ke Wang, Hauyu Baobab Liu, Adam Ginsburg, Tie Liu, Qizhou Zhang, **Nazar Budaiev**, Xindi Tang, Peter Schilke, Suinan Zhang, Sihan Jiao, Wenyu Jiao, Siqi Zheng, Beth Jones, J. M. Diederik Kruijssen, Cara Battersby, Daniel L. Walker, Elisabeth A. C. Mills, Jens Kauffmann, Steven N. Longmore, Thushara G. S. Pillai. *"Dual-band Unified Exploration of three CMZ Clouds (DUET): Cloud-wide census of continuum sources showing low spectral indices"*. A&A 697, A164 (May 2025). 10.1051/0004-6361/202453601.

10. Adam Ginsburg, John Bally, Ashley T. Barnes, Cara Battersby, **Nazar Budaiev**, Natalie O. Butterfield, Paola Caselli, Laura Colzi, Katarzyna M. Dutkowska, Pablo García, Savannah Gramze, Jonathan D. Henshaw, Yue Hu, Desmond Jeff, Izaskun Jiménez-Serra, Jens Kauffmann, Ralf S. Klessen, Emily M. Levesque, Steven N. Longmore, Xing Lu, Elisabeth A. C. Mills, Mark R. Morris, Francisco Nogueras-Lara, Tomoharu Oka, Jaime E. Pineda, Thushara G. S. Pillai, Víctor M. Rivilla, Álvaro Sánchez-Monge, Miriam G. Santa-Maria, Howard A. Smith, Yoshiaki Sofue, Mattia C. Sormani, Grant R. Tremblay, Gijs Vermariën, Alexey Vikhlinin, Serena Viti, Dan Walker, Q. Daniel Wang, Fengwei Xu, Qizhou Zhang. *"A Broad Line-width, Compact, Millimeter-bright Molecular Emission Line Source near the Galactic Center"*. ApJ 968.1, L11 (June 2024). 10.3847/2041-8213/ad47fa.

11. D. Jeff, A. Ginsburg, A. Bulatek, **N. Budaiev**, A. Sanchez-Monge, M. Bonfand, C. Battersby, F. Meng, P. Schilke, A. Schmiedeke. *"Thermal Properties of the Hot Core Population in Sagittarius B2 Deep South."* ApJ 962, 48 (Mar. 2024). 10.3847/1538-4357/ad1507.

12. Y. T. Yan, C. Henkel, K. M. Menten, Y. Gong, H. Nguyen, J. Ott, A. Ginsburg, T. L. Wilson, A. Brunthaler, A. Belloche, J. S. Zhang, **N. Budaiev**, D. Jeff. *"Discovery of non-metastable ammonia masers in Sagittarius B2"*. A&A 666, L15 (Oct. 2022). 10.1051/0004-6361/202245024.

13. F. Meng, Á. Sánchez-Monge, P. Schilke, A. Ginsburg, C. DePree, **N. Budaiev**, D. Jeff, A. Schmiedeke, A. Schwörer, V. S. Veena, Th. Möller. *"The physical and chemical structure of Sagittarius B2. VI. UCHii regions in Sgr B2"*. A&A 666, A31 (Oct. 2022). 10.1051/0004-6361/202243674.

Contributing Author – ACES Large Collaboration; contributed to data reduction

14. Steven N. Longmore, John Bally, Ashley T. Barnes, Cara Battersby, Laura Colzi, Adam Ginsburg, and 87 coauthors, *"ALMA Central Molecular Zone Exploration Survey (ACES) I: Overview paper"*, in review in MNRAS (Aug. 2025).

15. Adam Ginsburg, Daniel L. Walker, Álvaro Sánchez-Monge, Ashley T. Barnes, Xing Lu, Jaime E. Pineda, and 83 coauthors, *"ALMA Central Molecular Zone Exploration Survey (ACES) II: 3mm continuum images"*, in review in MNRAS (Aug. 2025).

16. Daniel L. Walker, Adam Ginsburg, Ashley T. Barnes, J. Armijos-Abendaño, **Nazar Budaiev**, Alyssa Bulatek, and 71 coauthors, *"ALMA Central molecular zone Exploration Survey (ACES) III: Molecular line data reduction and HNCO & HCO+ data preview"*, in review in MNRAS (Aug. 2025).

17. Xing Lu, Daniel L. Walker, Adam Ginsburg, Ashley T. Barnes, J. Armijos-Abendaño, **Nazar Budaiev**, and 69 coauthors, *"ALMA Central molecular zone Exploration Survey (ACES) IV: Data of the two intermediate-width spectral windows"*, in review in MNRAS (Aug. 2025).

18. Pei-Ying Hsieh, Daniel L. Walker, Adam Ginsburg, Ashley T. Barnes, J. Armijos-Abendaño, **Nazar Budaiev** and 68 coauthors, *"ALMA Central molecular zone Exploration Survey (ACES) V: CS(2-1), SO(23 − 12), CH3CHO (5(1,4) − 4(1,3)), HC3N(11-10) and H40α lines data preview"*, in review in MNRAS (Aug. 2025).