

XINFENG XU

Curriculum Vitae/Mar. 2022

CONTACT INFORMATION

**Bloomberg Center 227,
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APPOINTMENTS

Johns Hopkins University (JHU)

Postdoc Researcher (2020 – current)

Advisors: Dr. Tim Heckman (JHU), Dr. Alaina Henry (Space Telescope Science Inst.)

Virginia Polytechnic Institute and State University (VT)

Ph.D., Physics, Astrophysics Emphasis, Aug. 2014 - May. 2020

Advisor: Dr. Nahum Arav

Master of Science, Computer Science, Aug. 2017 - May 2019 (Double Degree)

Advisor: Dr. B. Aditya Prakash

University of Science and Technology of China (USTC)

Bachelor of Science, Physics, Astrophysics Emphasis, Sep. 2010 - Jun. 2014

Advisor: Dr. Junxian Wang

SUCCESSFUL TELESCOPE PROPOSALS

Accepted General Observing Proposals:

8. Gemini FT Proposal 2022A (3.2 hrs; PI: Xu, Xinfeng) Jan. 2022

- First-ever Mapping [O III] Outflows in a Broad Absorption Line Quasar with Strong AGN Feedback

7. JWST Cycle 1 (74.3 hrs; PI: Kassin, Susan) March 2021

- A Pathfinder for JWST Spectroscopy: Deep High Spectral Resolution Maps of Galaxies over $1 < z < 6$

6. HST Cycle 29, GO (12 orbits; PI: James, Bethan) June 2021

- [C II], a High-z Diagnostic Diamond in the Rough

5. HST Cycle 29, GO (14 orbits; PI: Hayes, Matthew) June 2021

- The ionizing output of galaxies undergoing the most extreme feedback

4. VLA/21B (160.17 hrs; PI: Borthakur, Sanchayeeta) May 2021

- Characterizing Radio Continuum Emission from Low- z Lyman Continuum Leakers
- 3. MDM Telescope, 2.4m (2 nights, PI: Oey, Sally; Co-PI: Xu, Xinfeng) 2021**
- Unusual Balmer Decrements in Local Starburst Galaxies: Incorrect Calibration or New Astrophysics?
- 2. Keck Telescope, 2021A (2 nights; PI: Jaskot, Anne) Dec 2020**
- The Nebular Properties of Lyman Continuum Emitters: Deep Spectroscopy for the HST Low-Redshift Lyman Continuum Survey
- 1. HST Cycle 24, GO (20 orbits; PI: Arav, Nahum) June 2016**
- Deciphering quasar outflows and measuring their contribution to AGN feedback.

Accepted Archival or Theory Research Proposals:

- 5. HST Cycle 29, AR (PI: Carr, Cody) June 2021**
- Modeling the Mg II-Lyman Alpha Relation as a Calibrator of the Lyman Continuum Escape Fraction
- 4. HST Cycle 29, AR (PI: Arav, Nahum) June 2021**
- Measuring the contribution of quasar outflows to AGN feedback
- 3. HST Cycle 29, AR (PI: Arav, Nahum) June 2021**
- A new paradigm for Seyfert outflows and their connection to AGN feedback
- 2. HST Cycle 27, AR (PI: Arav, Nahum) June 2019**
- Are quasar outflows a major contributor to AGN feedback? HST/COS to the rescue.
- 1. HST Cycle 24, AR (PI: Arav, Nahum) June 2016**
- The COS revolution of AGN outflow science.

DATA REDUCTION EXPERIENCE

Hubble Space Telescope (HST) Data: Worked with the HST/COS about ultraviolet (UV) spectra. Involved in 3 first-author and 6 co-author papers, and two other first-author paper submitted (till 2022 March).

Very Large Telescope (VLT) Data: Worked with the X-Shooter spectrograph about UV, optical and near-infrared spectra. Published 2 related first-author papers.

Sloan Digital Sky Survey (SDSS) Data: Extracting quasar spectra and conducting large quasar surveys. Published 1 related co-author paper (with significant contribution).

Multiple Mirror Telescope (MMT) Data: Observed remotely for 2 nights adopting MMT/Blue-channel spectrograph. Familiar with data reduction and analyses. Preparing 1 paper in 2022.

TECHNICAL SKILLS

Language: Python, IDL, Latex, R(basic), SQL(basic), and HTML(basic).

Operating Systems: Mac OSX, Linux.

AWARDS AND HONORS

Master Thesis Research Award C.S. Dep., VT Spring 2019

Graduate School Scholarship Virginia Tech Fall 2017

TEACHING APPOINTMENTS

Jan. 2019 - present: Teaching Assistant, Introduction to Astrophysics, Virginia Tech

Jan. 2017 - Dec. 2018: Research Assistant, Virginia Tech

Aug. 2014 - Dec. 2016: Teaching Assistant, Instructor for Fdn. of Physics Lab.

MENTORING

Mr. Ziwei Ding, undergraduate student, Virginia Tech Feb. 2019 – Present

Ms. Yijun Song, undergraduate student, Virginia Tech May 2019 – Present

Mr. Jake Pighini, REU project, Emory & Henry College Summer 2018

Mr. Sean Heston, REU project, Virginia Tech Summer 2018

Mr. Collier Sean, REU project, Virginia Tech Summer 2018

OUTREACH

Organizing Teams for STScI 2022 Spring Science Workshop Spring 2022

Hosts for JHU Astrocoffee Weekly Talks Sep. 2021 - present

PRESENTATIONS AND POSTERS

13. “The Properties of Starburst-Driven Warm Ionized Outflows from CLASSY Project”. Invited talks presented at the **Star formation and ISM seminar at Princeton University, Mar. 2022.**

12. “Tracing LyC and Ly α escape from Mg II Emission Lines”. Talks presented at the **LymanRAS: The production and escape of Lyman photons through time and space, Jan. 2022.**

11. “Tracing LyC and Ly α escape from Mg II Emission Lines”. Talks presented at the **SAZERAC: Early Galaxy Formation Near and Far — Preparing for a Long Journey with JWST**, Dec. 2021.
10. “Ionized Outflows Properties and Feedback in Quasars and Star-forming Galaxies”. Talks presented at the **University of Science and Technology of China, Seminar 2021**, Oct. 2021.
9. “Connections between Ionized outflows in $z \sim 2.0$ quasars from absorption and emission”. Talks presented at the **JHU Astrocoffee 2021**, Sep. 2021.
8. “From Constraints of the Partial Coverage of Galactic Winds”. Invited talk presented at the **Baltimore Wind Workshop** at Johns Hopkins University, Aug. 2021.
7. “Extreme Outflows in Quasars: Most Energetic & Largest Accelerated Outflows”. Invited talk presented at **Johns Hopkins University, US**, Feb. 2021.
6. “How Do Quasars Impact Their Host Galaxies?- Studies From Absorption and Emission Quasar Outflows”. Invited talk presented at **Space Telescope Science Institute, US**, June 2020.
5. “Distance and Energetics of Quasar Outflows: Contribution to Galactic Feedback Processes”. Invited talk presented at **York University in Toronto, Canada**, September 2019.
4. “Extreme-UV Analysis of SDSS J1042+1646 from HST/COS Observations: Distances, Energetics, and Accelerating Outflow”. Talk presented at the **American Astronomical Society meeting in Seattle, US**, January 2019.
3. “VLT/X-Shooter Survey of BAL & Mini-BAL Quasars: Distances And AGN Feedback”. Talk presented at the Astrophysical seminar in **Virginia Tech, US**, April 2018.
2. “VLT/X-Shooter survey of BAL & mini-BAL quasars: Distances from the central source and Energetics”. Poster presented at the **American Astronomical Society meeting in Washington, D.C., US**, January 2018.
1. “A mini-BAL outflow at 1500 pc from central source, VLT/X-Shooter observations”. Poster presented at the **AGN Winds Conference on the Georgia Coast, US**, June, 2017.

Refereed First-Author Papers and Other Papers with Significant Contribution:

12. **Xu, Xinfeng**; Henry, Alaina; Heckman, Tim; Chisholm, John et al.
[Tracing Ly \$\alpha\$ and Lyman Continuum Escape in Galaxies by Mg II Emission](#)
submitted 2022.
11. **Xu, Xinfeng**; Heckman, Tim; Henry, Alaina; Berg, Danielle A.; Chisholm, John; James, Bethan L.; Martin, Crystal L.; Stark, Daniel P. and the CLASSY Team;

The COS Legacy Archive Spectroscopy SurveY (CLASSY) III: The Properties of Starburst-Driven Warm Ionized Outflows
submitted 2022.

10. **Xu, Xinfeng**; Arav, Nahum; Miller, Timothy; Korista, Kirk T.; Benn, Chris;
[Physical Conditions of Iron-peak Low-ionization Lines in the FeLoBAL Quasar Q0059-2735](#)
Monthly Notices of the Royal Astronomical Society, 2021MNRAS.506.2725X.
9. **Xu, Xinfeng**; Zakamska, Nadia L.; Arav, Nahum; Miller, Timothy; Benn, Chris;
[Evidence that Emission and Absorption Outflows in Quasars Are Related](#)
Monthly Notices of the Royal Astronomical Society, 2020MNRAS.495..305X.
8. **Xu, Xinfeng**; Arav, Nahum; Miller, Timothy; Kriss G. A.; Plesha, R.;
[HST/COS observations of quasar outflows in the 500 – 1050Å rest-frame, II: The Most Energetic Quasar Outflow](#)
The Astrophysical Journal Supplement, 2020ApJS..247...38X.
7. **Xu, Xinfeng**; Arav, Nahum; Miller, Timothy; Kriss G. A.; Plesha, R.;
[HST/COS observations of quasar outflows in the 500 – 1050Å rest-frame, IV: The Largest Broad Absorption Line Acceleration](#)
The Astrophysical Journal Supplement, 2020ApJS..247...40X
6. **Xu, Xinfeng**; Arav, Nahum; Miller, Timothy; Kriss G. A.; Plesha, R.;
[HST/COS observations of quasar outflows in the 500 – 1050Å rest-frame, VI: Wide, Energetic Outflows in SDSS J0755+2306](#)
The Astrophysical Journal Supplement, 2020ApJS..247...42X
5. **Xu, Xinfeng**; Arav, Nahum; Miller, Timothy; Benn, Chris
[VLT/X-Shooter Survey of BAL Quasars: Large Distance Scale and AGN Feedback](#)
The Astrophysical Journal, 2019ApJ...876..105X.
4. **Xu, Xinfeng**; Arav, Nahum; Miller, Timothy; Benn, Chris
[A Mini-BAL Outflow at 900 pc from the Central Source: VLT/X-shooter Observations](#)
The Astrophysical Journal, 2018ApJ...858...39X
3. Arav, Nahum; **Xu, Xinfeng**; Kriss G. A. et al. (HST/COS collaboration, 21 co-authors)
[Multi-wavelength campaign on NGC 7469, V. Analysis of the HST/COS observations: Super solar metalicity, distance, and trough variation models](#)
Astronomy & Astrophysics, 2020AA...633A..61A
2. Arav, Nahum; **Xu, Xinfeng**; Miller, Timothy; Kriss G. A.; Plesha, R.;
[HST/COS observations of quasar outflows in the 500 – 1050Å rest-frame, I: The Most Energetic Quasar Outflows In The Universe And Other Discoveries](#)
The Astrophysical Journal Supplement, 2020ApJS..247...37A
1. Arav, Nahum; Liu, Guilin; **Xu, Xinfeng**; Stidham, James; Benn, Chris; Chamberlain, Carter

Evidence that 50% of BALQSO Outflows Are Situated at Least 100 pc from the Central Source

The Astrophysical Journal, 2018ApJ...857...60

Refereed Co-Author Papers:

12. James, Bethan L.; Berg, Danielle A.; King, Teagan; and the CLASSY Team
[CLASSY-II: A technical Overview of the COS Legacy Archive Spectroscopic Survey](#)
The Astrophysical Journal Supplement, submitted, 2021
11. Berg, Danielle A.; James, Bethan L.; King, Teagan; McDonald, Meaghan; Chisholm, John; Heckman, Timothy; Martin, Crystal L.; Stark, Dan P. and the CLASSY Team
[The COS Legacy Archive Spectroscopy Survey \(CLASSY\) Treasury Atlas](#)
The Astrophysical Journal Supplement, accepted, 2021
10. Saldana-Lopez, Alberto; Schaerer, Daniel; Chisholm, John; Flury, Sophia R.; Jaskot, Anne E. et al.
[The Low-Redshift Lyman Continuum Survey: Unveiling the ISM properties of low-z Lyman continuum emitters](#)
Astronomy & Astrophysics, submitted, 2021
9. Flury, Sophia R.; Jaskot, Anne E.; Ferguson, Harry; Worseck, Gabor; Makan, Karill; Chisholm, John et al.
[The Low-Redshift Lyman Continuum Survey \(LzLCS\) : Introduction and Sample Properties](#)
The Astrophysical Journal Supplement, submitted, 2021
8. Wang, Bingjie; Heckman, Timothy M., Ricardo, Amorin; Sanchayeeta, Borthakur; Chisholm, John et al.
[The Low-redshift Lyman-continuum Survey: \[S II\] Deficiency and the Leakage of Ionizing Radiation](#)
The Astrophysical Journal, 2021ApJ...916....3W.
7. Miller, Timothy; Arav, Nahum; **Xu, Xinfeng**; Kriss G. A.;
[The contribution of quasar absorption outflows to AGN feedback](#)
Monthly Notices of the Royal Astronomical Society, 2020MNRAS.499.1522M
6. Zeilig-Hess, Meir; Levinson, Amir; **Xu, Xinfeng**; Arav, Nahum;
[BALQSO Spectra Explained by Shock Disruption of Galactic Clouds](#)
Monthly Notices of the Royal Astronomical Society, 2020MNRAS.491.4325Z.
5. Miller, Timothy; Arav, Nahum; **Xu, Xinfeng**; Kriss G. A.; Plesha, R.;
[HST/COS Observations of Quasar Outflows in the Extreme UV, III: Four Similar and Energetic Outflows in 2MASS J1051+1247 Likely Contributing to AGN Feedback](#)
The Astrophysical Journal Supplement, 2020ApJS..247...39M
4. Miller, Timothy; Arav, Nahum; **Xu, Xinfeng**; Kriss G. A.; Plesha, R.;
[HST/COS Observations of Quasar Outflows in the Extreme UV, V: Two Outflows in PKS J0352-0711: Distances, Energetics, and AGN Feedback](#)

The Astrophysical Journal Supplement, 2020ApJS..247...41M

3. Miller, Timothy; Arav, Nahum; **Xu, Xinfeng**; Kriss G. A.; Plesha, R.;
[HST/COS Observations of Quasar Outflows in the 500-1050Å Rest Frame. VII. Distances and Energetics for 11 Outflows in Five Quasars](#)
The Astrophysical Journal Supplement, 2020ApJS..249...15M
2. Kriss G. A. et al. (HST/COS, XMM-Newton and NuSTAR collaborations, 27 co-authors)
[HST/COS observations of the newly discovered obscuring outflow in NGC 3783](#)
Astronomy & Astrophysics, 2019A&A...621A..12k
1. Miller, Timothy R.; Arav, Nahum; **Xu, Xinfeng**; Kriss, Gerard A.; Plesha, Rachel J.; Benn, Chris; Liu, Guilin
[Distance, Energy, and Variability of Quasar Outflows: Two HST/COS Epochs of LBQS 1206+1052](#)
The Astrophysical Journal, 2018ApJ...865...90M

Conference Proceedings Papers:

- 2. Adhikari, Bijaya; **Xu, Xinfeng**; Ramakrishnan, Naren; Prakash, B. Aditya;
[EpiDeep: Exploiting Embeddings for Epidemic Forecasting](#)
Participated in U.S. national Centers for Disease Control and Prevention (CDC) flu challenge, 2018–2019 season
Published in Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, Pages 577-586, 2019
- 1. Chen, Liangzhe; **Xu, Xinfeng**; Lee, Sangkeun; Duan, Sisi; Tarditi, Alfonso G.; Chinthavali, Supriya; Prakash, B. Aditya;
[HotSpots: Failure Cascades on Heterogeneous Critical Infrastructure Networks](#)
Collaborated with Oak Ridge National Laboratory (ORNL), US
Published in Proceedings of the Conference on Information and Knowledge Management (CIKM), Pages 1599-1607, 2017

Press Releases:

- 2. @astronomy.com; by Mara Johnson-Groh, May 2022;
[New CLASSY atlas provides clues about galaxy evolution](#)
- 1. @nasa.gov; by Claire Andreoli, Ann Jenkins, Ray Villard, May 2020;
[Quasar Tsunamis Rip Across Galaxies](#)