Curriculum Vitæ

Nahum Arav

Virginia Tech Physics Dept.	e-mail: arav@vt.edu	skype: nahum.arav
Blacksburg, VA 24061	phone: 540-231-8736	fax: 540-231-7511

Education:

Ph.D. Astrophysics, University of Colorado, 1994, adviser: Begelman

Employment:

2016 -	Full professor, Physics department, Virginia Tech
2016 - 2017	Lady Davis fellow, Technion Israel
2008 - 2016	Associate professor, Physics department, Virginia Tech
2002 - 2007	Research professor, APS dept, University of Colorado
1999 - 2002	Visiting Researcher, UC Berkeley
1997 - 1999	Research fellow, IGPP, LLNL
1994 - 1997	Research fellow, Theoretical Astrophysics, Caltech

Teaching Experience:

Taught 28 university courses at Virginia Tech and CU Boulder, including: the **"Virginia Tech Signature Experience"** course.

Awarded Research Grants:

Multi-year projects:
NSF 2021, 2014, 2005; NASA ADAP 2012; NASA APRA 2008;
FUSE Legacy 2005; HST Legacy 2002; NASA LTSA 2001

Single years programs:
26 HST projects (cycles 5-29); 2 FUSE, 4 Chandra
5 XMM, one AstroE2 and one NASA ADP projects.

Total awarded grants: **$5,000,000**

Publications: 112 refereed publications (including 80 since 2008)

Supervisory responsibilities 2002 - present:

Hired and supervised 1 senior research scientist, 6 p-docs,
8 graduate students, 29 undergraduate students

2014 - present: sample of Invited Talks:

Colloquia: Harvard, Princeton, Toronto, GSU, UMD; Conf: Beijing
Seminars: MIT, Harvard, Apsen, Technion, JMU, Perdue, Notre Dame

Honors and Awards:

Virginia Tech College of Science Certificate of Teaching Excellence (2014)
Virginia Tech: Scholar of the week (2013), Teacher of the week (2012)

Research Interests:

AGN Feedback, Quasar Outflows, UV and X-ray Absorbers in Seyferts

Full list of Research Grants:

PI:	2021 HST cycle 29 AR-16601, Arav's budget	$154,848
PI:	2021 HST cycle 29 AR-16600, Arav's budget	$154,848
PI:	2021 NSF Astronomy AST-2106249 Arav's budget	$500,000
PI:	2019 HST cycle 27 AR-15786, Arav's budget	$130,149
PI:	2017 HST cycle 24 AR-14551, Arav's budget	$114,045
PI:	2016 HST cycle 24 GO-14739, Arav's budget	$56,777
PI:	2016 HST cycle 24 GO-14777, Arav's budget	$108,701
CoI:	2015 NASA ADAP, 12-0181c, Arav's budget	$120,000
PI:	2015 HST cycle 23 GO-14242, Arav's budget	$30,000
CoI:	2015 HST cycle 23 GO-14054, Arav's budget	$25,000
CoI:	2015 HST cycle 23 GO-14176, Arav's budget	$20,000
PI:	2014 NSF Astronomy AST-1413319 Arav's budget	$500,000
CoI:	2014 NASA ADAP, 12-0181b, Arav's budget	$120,000
PI:	2013 HST cycle 21 AR-13233 Arav's budget	$100,000
CoI:	2013 HST cycle 21 GO-13184, Arav's budget	$28,000
CoI:	2013 NASA ADAP, 12-0181a, Arav's budget	$120,000
CoI:	2012 HST, cycle 20 GO-12916, Arav's budget	$30,000
CoI:	2012 XMM-Newton/HST program, Arav's budget	$30,000
PI:	2011 HST, cycle 19, HST-AR-12653 Arav's budget	$110,000
CoI:	2011 Chandra Cycle 13 13700137, Arav's budget	$37,000
CoI:	2009 HST cycle 17 12022, Arav's budget	$65,774
CoI:	2009 Chandra Cycle 11. 108, Arav's budget	$57,780
CoI:	2009 XMM cycle 8, 060472, Arav's budget	$31,299
CoI:	2009 XMM cycle 8, 060453, Arav's budget	$22,000
CoI:	2008 NASA APRA, Arav's budget	$78,000
PI:	2008 HST, cycle 17, 11686, Arav's budget	$150,000
CoI:	2008 HST, cycle 17,11745, Arav's budget	$15,000
PI:	2006 Chandra, c. 8, 877, Archive grant Arav's budget	$120,000
PI:	2005 NSF Astronomy Arav's budget	$460,000
PI:	2005 FUSE cycle 6, F112 Arav's budget	$60,000
CoI:	2005 XMM cycle 4, 30248, CoI budget	$30,000
CoI:	2005 Astroe2 Cycle 1, CoI budget	$35,000
PI:	2004 HST, cycle 13, 10225, Arav's budget	$100,000
PI:	2003 FUSE, cycle 4, D154, Arav's budget	$43,000
CoI:	2002 Chandra, c. 4, 532, Arav's budget	$80,000
CoI:	2002 HST, cycle 11, 9688, CoI budget	$60,000
PI:	2001 NASA: LTSA. Arav's budget	$500,000
PI:	2001 HST, cycle 11, 9536, Arav's budget	$300,000
CoI:	2001 HST, cycle 11, 9511, Arav's budget	$60,000
PI:	2001 HST, cycle 11, 9507, Arav's budget	$100,000
PI:	2000 HST, cycle 10, 9079, Arav's budget	$48,000
PI:	1999 HST, cycle 8, 8284, Arav's budget	$120,000
PI:	1998 NASA: ADP Arav's budget	$100,000
PI:	1996 HST, cycle 6, 6350, Arav's budget	$43,000
PI:	1995 HST, cycle 5, 6091, Arav's budget	$30,000
PI:	1995 HST, cycle 5, 5784, Arav's budget	$52,000

Invited Talks 2004 - present:

- Colloquium at UCLA (fall 2022)
- seminar, Technion (Israel, summer 2022)
- seminar, Hebrew University (Israel, summer 2022)
- seminar, Tel Aviv University (Israel, summer 2022)
- Colloquium at VCU (Zoom, fall 2021)
- Baltimore Wind Workshop JHU (in person, August 2021)
- ACP Black Holes, Aspen (Zoom summer 2021)
- Colloquium at UMD (Zoom, fall 2020)
- Colloquium at the University of Pittsburgh (Zoom, fall 2020)
- Colloquium at the University of Wyoming (Zoom, fall 2020)
- seminar, JILA CU Boulder (summer 2019)
- seminar, Technion (Israel, summer 2019)
- seminar, Tel Aviv University (Israel, summer 2019)
- Colloquium at SC State University (Columbia SC, september 2018)
- seminar, Technion (Israel, summer 2018)
- seminar, Tel Aviv University (Israel, summer 2018)
- Colloquium at Georgia State University (Atlanta, November 2017)
- Colloquium at Wake Forest University (NC, November 2017)
- Astronomy seminar at VT (Blacksburg Fall 2017)
- AGN and starburst winds' EWASS 2017 Symposium (Prague June 2017)
- AGN Winds on the Georgia Coast, conf (Georgia ,June 2017)
- AGN Outflows at the Technion, workshop (Israel ,May 2017)
- seminar, The Hebrew University in Jerusalem (Israel, spring 2017)
- presentation, Technion research retreat (Israel, spring 2017)
- Colloquium at the Ben Gurion university (Israel, Fall 2016)
- seminar, Weizmann Institute of Science (Israel, Fall 2016)
- presentation, Israeli Space Agency meeting (Israel, fall 2016)
- seminar, Technion (Israel, Fall 2016)
- seminar, Tel Aviv University (Israel, Fall 2016)
- Colloquium at Virginia Tech (Fall 2015)
- "30 meters telescope conference" (Washington DC,June 2015)
- "Black Holes accretion and AGN feedback, conf" (China, June 2015)
- seminar, Technion (June 2015, Israel)
- Seminar at Perdue University (April 2015)
- Seminar at Notre Dame University (April 2015)
- Seminar at the Aspen School of Physics (September 2014)
- Seminar at James Maddison University (September 2014)
- Seminar, Technion (summer 2014, Israel)
- Colloquium at Princeton (April 2014)
- Colloquium at Harvard (April 2014)
- Seminar at MIT (April 2014)
- Seminar at Harvard (April 2014)
- Colloquium at CITA (U. Toronto April 2014)
- Colloquium at NASA JPL (California, September 2013)
- "Fifty Years of Quasars: A Symposium in Honor of Maarten Schmidt" (Caltech September 2013)

- Seminar, Technion (July 2013, Israel)
- "Seeking the leading Actor on the Cosmic Stage" conf,(Italy, June 2013)
- "Galactic Winds Near and Far" conf, (Ringberg, Germany, June 2013)
- Colloquium at UVA (April 2013 Charlottesville)
- Seminar, Caltech (March 2013 Pasadena)
- Colloquium at UCLA (March 2013 Los Angeles)
- Colloquium at UNLV (March 2013 Las Vegas)
- Colloquium at NCSU (Fall 2012, Raleigh NC)
- seminar, Tel Aviv University (summer 2012, Israel)
- seminar, Technion (summer 2012, Israel)
- seminar, Hebrew University (summer 2012, Israel)
- seminar, Weizmann Institute (summer 2012, Israel)
- "Gas Flows in Galaxies", STScI Symposium (May 2012 Baltimore)
- University of Chicago , colloquium (Chicago March 2012)
- Invited talk, UC Berkeley, (Berkeley March 2012)
- "Outflows, Winds, and Jets conference (Charlottesville, March 2012)
- Space Telescope Science Institute, colloquium (Baltimore Fall 2011)
- AGN Winds in Charleston conference (Charleston, SC, fall 2011)
- Seasaps conference (Roanoke VA , fall 2011)
- Star Formation in Galaxies: The Herschel Era (Germany summer 2011)
- Invited talk, Technion (summer 2011, Israel)
- 217th American Astronomical Society Meeting (Seattle January 2011)
- Stanford University Colloquium (fall 2010, San Fransisco)
- UCSD Colloquium (fall 2010, San Diego)
- Ins and Outs of Black Holes conference (fall 2010, Maryland)
- Invited talk, University of Washington (Seattle summer 2010)
- seminar at the CfA, Harvard (spring 2010, Boston)
- seminar at the MIT physics department (spring 2010, Boston)
- Growth of Black Holes conference (spring 2010, Durham Britain)
- High res X-ray spectroscopy conference (spring 2010, Netherlands)
- University of Pittsburgh, colloquium (spring 2010, Pittsburgh)
- invited talk at the IAU symposium 267 (summer 2009, Brazil)
- ESO, Joint Munich colloquium (spring 2009, Munich Germany)
- University of Kentucky, colloquium (Fall 2008, Lexingtom, KY)
- University of Maryland, colloquium (Fall 2008, Washington DC)
- Invited talk, Aspen's physics institute (Summer 2008, Aspen Colorado)
- Leiden University colloquium (spring 2008, Netherlands)
- Utracht University colloquium (spring 2008, Netherlands)
- Invited talk, Tel Aviv University (spring 2008, Israel)
- Invited talk, Harvard University (fall 2007, Boston)
- Invited talk, Technion University (fall 2007, Israel)
- Virginia Tech, colloquium (spring 2007, Blacksburg VA)
- Ringberg Castle conference (spring 2007 Germany)
- ESA XMM workshop (spring 2007 Spain)
- Invited talk, Workshop on AGN Physics (Spring 2006, TAU Israel)
- Invited talk, AGN winds conference (Fall 2005, US Virgin Islands)
- University of Texas , colloquium (Fall 2005, Austin)

- Invited talk, AGN and galaxy evolution conf. (Fall 2005, Rome)
- University of Wisconsin, colloquium (Spring 2005, Madison)
- University of Colorado, colloquium (Fall 2004, Boulder)

Outreach activities 2004 - present:

- Youtube video on the @whatdamath Channel of Anton Petrov:
Discovery of Quasar Tsunamis - Events That Could Kill Entire Galaxies,
https://www.youtube.com/watch?v=uLj6lCDI7bc
about our findings, 2020-2023; **viewed 100,000 times.**
- Interview for professor Bram Boroson Astrophysics class https://us.bbcollab.com/guest/6df3f8
July 20, 2022
- Interview for News station ABC13, about the findings of the
James Webb Space Telescope, July 12, 2022
https://www.wsls.com/news/local/2022/07/13/virginia-tech-astronomy-expert-webb-telescope-will-lead-to-new-discoveries/
- Interview for FOX News WFXR/WWCW/WFXRtv.com, about the
findings of the James Webb Space Telescope, July 12, 2022
https://wset.com/news/local/virginia-tech-professors-shares-importance-of-nasa-images-james-webb-space-telescope-stars-galaxies-hubble-nahum-arav-july-12-2022
- Radio interview with Virginia Talk Radio Network, July 14 2021
https://soundcloud.com/va-talk-radio-network/virginia-tech-professor-nahum-arau-on-the-recent-black-hole-neutron-star-collision
- presentation "the solar system" to 6th grade students
at the Blacksburg new school (Blacksburg, spring 2021)
- Radio interview with WINA, Charlottesville, December 21 2020
https://wina.com/podcasts/the-christmas-star/
- Radio interview about the Great conjunction, December 21 2020
KCBS San Francisco
- TV interview about the Great conjunction, December 18 2020
WDBJ 7 Roanoke
- Radio interview about the Great conjunction, December 18 2020
WVTF Roanoke
- Radio interview about the Great conjunction, December 17 2020
WTOP Washington DC
https://wtop.com/science/2020/12/totally-spectacular-all-eyes-on-night-sky-as-jupiter-saturn-inch-closer/
- TV interview about the Great conjunction, December 17 2020
WSLS TV Roanoke
https://www.wsls.com/weather/2020/12/18/saturn-jupiter-to-appear-at-their-closest-in-800-years-monday-night

AP news interview about the Great conjunction, December 16 2020
https://spectrumlocalnews.com/nys/capital-region/ap-online/2020/12/18/jupiter-saturn-merging-in-night-sky-closest-in-centuries
- TV interview about the Great conjunction, December 14 2020
Living Local on WFXR TV Roanoke

https://www.wfxrtv.com/living-local/the-great-conjunction-explained-on-virginia-tech-tuesday/

VTnews article about the Great conjunction, December 10 2020
https://vtnews.vt.edu/articles/2020/12/unirel-great-conjunction.html

- presentation "eclipses and seasons" to 5th grade students
  at the Kipps elementary school (Blacksburg, Fall 2019)
- Israel public talk "the Universe"
  at the Kfar Saba Medditerenean Towers (Israel, Summer 2019)
- presentation "the universe" to second grade students
  at the Kipps elementary school (Blacksburg, Spring 2019)
- presentation "space" to children ages 3-9
  at the Blacksburg Tall Oaks Montessori school (spring 2019)
- presentation "space" to second grade students
  at the Kipps elementary school (Blacksburg, Fall 2018)
- Israel public talk "the Modern Universe"
  at the Kfar Saba Mediterranean Towers (Israel, Summer 2018)
- Online interview on NBC NEWS: the launch of the Falcon heavy 2/7/18
  https://www.nbcnews.com/mach/science/
  here-s-what-will-happen-tesla-spacex-shot-space-ncna845566
- TV interview about the super-blue-blood moon of Jan 31 2018
  Roanoke channel 10 News
  https://www.wsls.com/news/virginia/roanoke/
  rare-super-blue-blood-moon-visible-in-virginia-wednesday-morning
- TV interview about the super-blue-blood moon of Jan 31 2018
  Roanoke channel 13 News
  http://wset.com/news/local/
  vt-physicists-excited-for-blue-moon-lunar-eclipse-wednesday-morning
- presentation "eclipses and seasons" to third grade students
  at the Kipps elementary school (Blacksburg, Spring 2018)
- presentation "The Blacksburg sky" to VT dorm students
  at VT (Blacksburg, Fall 2017)
- presentation "The night sky" to Shomrei Hagan
  wilderness instructors, Haifa (Israel, summer 2017)
- presentation "Astrophysics research" to gifted high-school students
  at the Technion (Israel, Spring 2017)
- presentation "space" to second grade students
  at the Haifa Einstein elementary school (Israel, Fall 2016)
- Israel public talk "Wonders of the Universe"
  at the Kfar Saba Medditerenean Towers Community (Israel, Fall 2016)
- presentation "space" to children ages 3-9
  at the Blacksburg Tall Oaks Montessori school (March 2016)
- Public talk "Pluto Smack Down!" (with Professor Simonetti, VT 4/23/15)
- presentation "space" to children ages 3-9
  at the Blacksburg Tall Oaks Montessori school (Feb 2015)
- VT Freethinkers club "Science, Religion and Spirituality" (fall 2014)
- VT Astronomy club talk (fall 2014)
- Organized a 200 audience public lecture by Dr. Martin Elvis titled:

Mining Asteroids“ (fall 2014)
- public talk during science week “The Paranormal Universe” (fall 2014)
- Interviewed for the Collegiate Times article entitled:
Debate sparks discussion about Pluto (fall 2014)
- presentation “space” to children ages 3-6
at the Blacksburg Tall Oaks Montessori school (Feb 2014)
- Lecture “the universe” to students ages 7-11
at the Blacksburg Tall Oaks Montessori school (Feb 2014)
- Virginia Tech campus-wide Webinar:
”Visitors from Afar: Meteors, Comets, and Asteroids 11/12/13.
- public talk “The Paranormal Universe” (fall 2012)
- Sigma Pi Sigma induction talk ”The Age of Discovery” (April 12 2012)
- Ranoke amatuer astronomy club talk ”supermassive BH” (spring 2012)
- Israel public talk “Wonders of the Universe” (2011)
- Ranoke College public talk “The Paranormal Universe” (2010)
- Lecture at the ”Circle of Excellence” VT Conf (2009)
- Organized a 300 audience public lecture by Dr Mario Livio titled:
Is god a Mathematician? (2009)
- Israel public talk “Wonders of the Universe” (2009)
- Virginia Tech public talk “The Paranormal Universe” (2008)
- Fiske Planetarium show “The Paranormal Universe” (2 shows sp 2007)
- Boulder JCC talk: “Science religion and spirituality” (2006)
- Fiske Planetarium show “Science, Religion and Spirituality” (2006)
- Amateur Astronomy club talk (Boulder Co, summer 2006)
- Panel discussion “Atomic Faith” Mizel Arts Center (Denver, 2006)
- Fiske Planetarium show “The Paranormal Universe” (2 shows sp 2005)
- Middle School Astronomy talk (Longmont Co, spring 2005)
- Elementry School Astronomy talk (Lyons Co, spring 2005)
- Fiske Planetarium show “The Paranormal Universe” (2 shows fall 2004)
- Amateur Astronomy club talk (Fort Collins Co, spring 2005)
- Fiske Planetarium show “ Quasars”(2 shows spring 2004)

List of full supervisory responsibilities 2002 - present:

- Hired and supervised a senior research scientist: Manuel Bautista
- Hired and supervised **6** p-docs: Jack Gabel, Jay Dunn, Benoit Borguet, Guilin Liu, Tim Miller, Maryam Dehghanian
- Hired and supervised **8** grad students:
Doug Edmonds, Carter Chamberlain, Weigang Liu, Xinfeng Xu, Sourabh Cheedella, Doyee Byun, Andrew Walker, Mayank Sharma
- Hired and supervised **29** undergraduate students: Wes Hofmann, Greg Lundeen, Daniel Zukowski, Maxwell Moe, Ashlee Wilkins. Melissa Yates, Curtis Ogle, Lake Singh, Melvin Davis, Sara Case, William Love, Harry White, Courtney Laughlin, Sarah True, Mary-Winn Rogers, George Lewandowski, James Stidham, Christian Gilbertson, Sean Heston, Jake Pighini, Sean Collier, Ziwei Ding, Yijun Song, Emily Frenk, Arjun Uppal, Sasha Mintz, Owen Smith, Jordan Holmes, Ishan Sobti

Teaching Experience (list of courses taught):

- Virginia Tech, PHYS 3655, Fall 2022
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS 3656, Spring 2022
"Introduction to Astrophysics II: galaxies and cosmology"
- Virginia Tech, PHYS 3655, Fall 2021
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS 3656, Spring 2021
"Introduction to Astrophysics II: galaxies and cosmology"
- Virginia Tech, PHYS 3655, Fall 2020
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS 3656, Spring 2020
"Introduction to Astrophysics II: galaxies and cosmology"
- Virginia Tech, PHYS 3655, Fall 2019
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS-4654 / PHYS-5654, Spring 2019
"Modern Cosmology / Advanced Modern Cosmology"
(A course taught in 4 modules by 4 instructors)
- Virginia Tech, PHYS 3656, Spring 2019
"Introduction to Astrophysics II: galaxies and cosmology"
- Virginia Tech, PHYS 3655, Fall 2018
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS 3656, Spring 2018
"Introduction to Astrophysics II: galaxies and cosmology"
- Virginia Tech, PHYS 3655, Fall 2017
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS 3656, Spring 2016
"Introduction to Astrophysics II: galaxies and cosmology"
- Virginia Tech, PHYS 3655, Fall 2015
"Introduction to Astrophysics I: Stars"
- Virginia Tech, PHYS 1056, Spring 2015
"Introduction to Astronomy: Stars and Galaxies,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1055, Fall 2014
"Introduction to Astronomy: the Solar System,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1056, Spring 2014
"Introduction to Astronomy: Stars and Galaxies,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1055, Fall 2013
"Introduction to Astronomy: the Solar System,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1056, Spring 2013
"Introduction to Astronomy: Stars and Galaxies,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1055, Fall 2012
"Introduction to Astronomy: the Solar System,"

Virginia Tech signature experience course
- Virginia Tech, PHYS 1056, Spring 2012
"Introduction to Astronomy: Stars and Galaxies,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1055, Fall 2011
"Introduction to Astronomy: the Solar System,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1056, Spring 2011
"Introduction to Astronomy: Stars and Galaxies,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1055, Fall 2010
"Introduction to Astronomy: the Solar System,"
Virginia Tech signature experience course
- Virginia Tech, PHYS 1055, Fall 2009
"Introduction to Astronomy: the Solar System,"
- Virginia Tech, PHYS 1056,Spring 2009
"Introduction to Astronomy: Stars and Galaxies,"
- Virginia Tech, PHYS 1055, Fall 2008
"Introduction to Astronomy: the Solar System,"
- CU Boulder, APS 1120,spring 2005
"Introduction to Astronomy Stars and Galaxies,"
- CU Boulder, APAS 3740, Spring 1994
"Cosmology and Relativity,"
- CU Boulder, APAS 1110, Fall 1990
"Introduction to Astronomy: the Solar System,"

REFEREED PUBLICATIONS:

1. Byun, Doyee; Arav, Nahum; Hall, Patrick B.
"VLT/UVES observation of the SDSS J2357-0048 outflow"
2022, MNRAS, 517, 1048

2. Walker, Andrew; Arav, Nahum; Byun, Doyee
"High mass flow rate in a BAL outflow of quasar SDSS J1130 + 0411"
2022, MNRAS, 516, 3778

3. Byun, Doyee; Arav, Nahum; Walker, Andrew
"VLT/UVES observation of the outflow in quasar SDSS J1439-0106"
2022, MNRAS, 516, 100

4. **Bischetti, M.; Feruglio, C.; D'Odorico, V.; Arav, N., et al.**
"Suppression of black-hole growth by strong outflows at redshifts 5.8-6.6 "
2022, Nature, 60, 244

5. Byun, Doyee; Arav, Nahum; Hall, Patrick B.
"The Farthest Quasar Mini-Broad Absorption Line Outflow from Its Central Source: Very Large Telescope/UVES Observation of SDSS

J0242+0049"
2022, ApJ, 927, 176

6. He, Zhicheng; Liu, Guilin; Wang, Tinggui; Arav, Nahum; et al.
"Evidence for quasar fast outflows being accelerated at the scale of tens of parsecs"
2022, **Science Advances**, 8, 3291

7. Kara, Erin; Mehdipour, Missagh; Kriss, Gerard A. et al.
"AGN STORM 2. I. First results: A Change in the Weather of Mrk 817"
2021, ApJ, 922, 151

8. 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"
2021, MNRAS, 506, 2725

9. Mehdipour, M.; Kriss, G. A.; Kaastra, J. S. et al.
"Transient obscuration event captured in NGC 3227. I. Continuum model for the broadband spectral energy distribution"
2021, A&A, 652A, 150

10. Williams, P. R.; Pancoast, A.; Treu, T. et al.
"Space Telescope and Optical Reverberation Mapping Project. XII. Broad-line Region Modeling of NGC 5548 "
2020, ApJ, 902, 74

11. Miller, Timothy R.; Arav, Nahum; Xu, Xinfeng; Kriss, Gerard A.
"The contribution of quasar absorption outflows to AGN feedback"
2020, MNRAS, 499, 1522

12. Xu, Xinfeng; Borguet, Benoit C. J.; Arav, Nahum; Edmonds, Doug; Chamberlain, Carter; Benn, Chris
"Erratum: "Major Contributor to AGN Feedback: VLT X-shooter Observations of S IV BALQSO Outflows" (2013, ApJ, 762, 49) "
2020, ApJ, 901, 89

13. Miller, Timothy R.; Arav, Nahum; Xu, Xinfeng; Kriss, Gerard A.; Plesha, Rachel J.
"HST/COS Observations of Quasar Outflows in the 500-1050A Rest Frame. VII. Distances and Energetics for 11 Outflows in Five Quasars "
2020, ApJS, 249, 15

14. Xu, Xinfeng; Zakamska, Nadia L.; Arav, Nahum; Miller, Timothy; Benn, Chris
"Evidence that emission and absorption outflows in quasars are related "
2020, MNRAS, 495, 305

15. Nahum Arav, Xinfeng Xu, Timothy Miller, Gerard A. Kriss, Rachel Plesha
"HST/COS observations of quasar outflows in the 500-1050A rest-frame: I the most energetic outflows in the universe and other discoveries "
2020 ApJS, 247, 37

16. Xinfeng Xu, Nahum Arav, Timothy Miller, Gerard A. Kriss, Rachel Plesha
"HST/COS observations of quasar outflows in the 500-1050A rest-frame: II The most energetic quasar outflow measured to date "
2020 ApJS, 247, 38

17. Timothy R. Miller, Nahum Arav, Xinfeng Xu, Gerard A. Kriss, and Rachel J. Plesha
"HST/COS observations of quasar outflows in the 500-1050A rest-frame: III Four Similar Outflows in 2MASS J1051+1247 with Enough Energy to be Major Contributors to AGN Feedback"
2020 ApJS, 247, 39

18. Xinfeng Xu, Nahum Arav, Timothy Miller, Gerard A. Kriss, Rachel Plesha
"HST/COS observations of quasar outflows in the 500-1050A rest-frame: IV The largest broad absorption line acceleration"
2020 ApJS, 247, 40

19. Timothy R. Miller, Nahum Arav, Xinfeng Xu, Gerard A. Kriss, and Rachel J. Plesha
"HST/COS observations of quasar outflows in the 500-1050A rest-frame: V Richness of Physical Diagnostics and Ionization-Potential-Dependent Velocity Shift in PKS J0352-071"
2020 ApJS, 247, 41

20. Xinfeng Xu, Nahum Arav, Timothy Miller, Gerard A. Kriss, Rachel Plesha
"HST/COS observations of quasar outflows in the 500-1050A rest-frame: VI Energetic outflows in SDSS J0755+2306"
2020 ApJS, 247, 42

21. Zeilig-Hess, Meir; Levinson, Amir; Xu, Xinfeng; Arav, Nahum
"BALQSO spectra explained by shock disruption of galactic clouds"
2020 MNRAS, 491, 4325

22. Grafton-Waters, S.; Branduardi-Raymont, G.; Mehdipour, M. et al.,
"Multi-wavelength campaign on NGC 7469. VI. Photoionisation modelling of the emission line regions and the warm absorber"
2020 A&A, 633A, 62

23. Arav, N.; Xu, X.; Kriss, G. A., et al.,
" Multi-wavelength campaign on NGC 7469. V. Analysis of the HST/COS

observations: Super solar metallicity, distance, and trough variation models ”
2020 A&A, 633A, 61A

24. Dehghanian, M.; Ferland, G. J.; Peterson, B. M. et al.
“A Wind-based Unification Model for NGC 5548: Spectral Holidays, Nondisk Emission, and Implications for Changing-look Quasars”
2019, ApJ, 882L, 30

25. Kriss, G. A.; De Rosa, G.; Ely, J., et al.
“Space Telescope and Optical Reverberation Mapping Project. VIII. Time Variability of Emission and Absorption in NGC 5548 Based on Modeling the Ultraviolet Spectrum ”
2019, ApJ, 881, 153

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