Fe **McBride**

Multimessenger Astrophysics · Multiwavelength Astronomy

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Summary

My expertise is in multimessenger and high-energy astrophysics. I have extensive teaching, supervising and mentoring experience.

Employment

Bowdoin College — *Brunswick, Maine*

Assistant Professor of Physics — *July 2022 – curent*

- Multimessenger research projects with undergraduate students

Pennsylvania State University — *University Park, Pennsylvania*

Eberly Postdoctoral Research Fellow — *October 2019 – June 2022*

- AMON multimessenger follow-up program implementation.
- Studying AGN with the Hobby-Eberly Telescope (HET).
- Multiwavelength observations of peculiar blazars.

  Advisors: Derek B. Fox, Michael Eracleous and Ana Matković

University of Amsterdam — *Amsterdam, the Netherlands*

Postdoctoral Researcher — *June 2016 – August 2019*

- Organized and led an international symposium on the future of multimessenger follow-up strategies.
- Contributed to the planning of the Cherenkov Telescope Array (CTA) project through the ASTERICS project: developing use cases, and follow-up strategies.

  Advisors: David Berge (DESY, Berlin) and Sera Markoff (University of Amsterdam)

NASA/GSFC — *Greenbelt, MD, USA*

Visiting researcher — *November 2013 and November 2015*

- working on various TANAMI AGN projects.
- *Fermi*/LAT flare advocate shift duties.

  Host: Roopesh Ojha

Education

Dr. Remeis Observatory/ECAP, FAU Erlangen-Nürnberg — *Erlangen, Germany*

Graduate student — *March 2013 – June 2016*

- thesis title “Extreme Environments: from supermassive black holes to supernovae”.
- X-ray and multiwavelength data analysis of blazars and AGN, broadband modeling, X-ray detector simualtions, neutrino calculations.
- Mentoring and teaching duties

  Advisors: Joern Wilms, Matthias Kadler

Dr. Remeis Observatory/ECAP, FAU Erlangen-Nürnberg — *Erlangen, Germany*

Master of Science in physics — *August 2010 – March 2013*

- thesis title “Multiwavelength Observations of TANAMI Sources”.

  Advisors: Joern Wilms, Matthias Kadler

Dr. Remeis Observatory/ECAP, FAU Erlangen-Nürnberg — *Erlangen, Germany*

Bachelor of Science in physics — *September 2007 – August 2010*

- thesis title “Swift Observations of TANAMI Counterparts”.

  Advisors: Joern Wilms, Matthias Kadler

Teaching experience

	Astro 6: Stars, Galaxies, and the Universe, Penn State University	*Spring 2022*
	Astro 1: The Astronomical Universe, Penn State University	*Fall 2021*
	Astro 21: Introduction to Research in Astronomy, Penn State University	*Spring 2021*
Invited lecture	**School of Astroparticle physics**, Germany	*2018*
Invited lectures	**School on High Energy Astrophysics and Spectroscopy**, Kigali, Rwanda	*2016*
TA	**Dr. Remeis Observatory, ECAP/FAU**, Germany	*2011 – 2016*

Advising and mentorship

I have extensive advising and mentoring experience, having worked with more than 14 graduate and undergraduate students.

Penn State University: Advising 3 undergraduate students and 1 graduate project

Penn State University

Current projects — *2020 – current*

- working with undergrads Chase Owen, Grant Temple, and Nicholas Craft (until April 2021)
- working with grad student Andrew Pellegrino

University of Amsterdam: co-advising a graduate and two master's project

University of Amsterdam

Previous projects — *Jun. 2016 – 2020*

- Co-advising PhD student Matteo Lucchini and Master's projects of Maria Cosette Molijn (UvA) and Jean Damascène Mbarubucyeye (Mbara University)

Dr Remeis Observatory

Erlangen, Germany

Summer REU advising — *2014 – 2015*

- Advising international summer students funded through DAAD RISE program
- Kunal Deoskar (IIT Kharagpur), Alyssa McElroy (West Texas A&M), Claire Baxter (University of Edinburgh), Bingjie Wang (University of Pittsburgh)

Dr Remeis Observatory

Erlangen, Germany

Previous projects — *2013 – 2016*

- Advising Clara Deifel, high school student; project: Gamma-ray bursts with *Swift*/UVOT; project won first place in regional "Jugend forscht" competition and second place in the state-wide competition.
- Co-advising of Bachelor and Master's projects: Christina Gräfe, Christoph Bürkel, Andrea Gokus

Selection of accepted observing proposal and grants

2022 (AO-21)	**70 ksec $45k**, XMM-Newton: X-ray sources and neutrinos: Investigating the most promising IceCube neutrinos	*PI: F. McBride*
2022 (AO-8)	**70 ksec, $93k**, NASA/NuSTAR: Blazar X-rays and neutrinos: Investigating the most promising IceCube neutrino alerts	*PI: F. McBride*
2022	**1.07 hr**, Hobby-Eberly Telescope (HET): Multimessenger AMON follow-up of neutrino events	*PI: F. McBride*
2022	**1.4 hr**, Hobby-Eberly Telescope (HET): Accretion disks in blazar	*PI: F. McBride*
2021	**40 ksec DDT**, NASA/NuSTAR: Follow-up of IceCube-210922A	*PI: F. Krauß*
2021	**70 ksec, $87k**, NASA/NuSTAR: Investigating the most promising IceCube neutrino alerts	*PI: F. Krauß*
2021	**1 hour DDT**, Very Large Array (VLA): Follow-up of IceCube event IceCube-200615A	*PI: F. Krauß*
2020	**60 ksec, $61k**, NASA/NuSTAR: Understanding the hard X-ray emission in the blazar PKS 2005−489	*PI: F. Krauß*
2020	**70 ksec, $69k**, NASA/NuSTAR: Investigating the most promising IceCube neutrino alerts	*PI: F. Krauß*
2021/01	**1.45 hours**, Hobby-Eberly Telescope (HET): Studying the accretion disk signature in FSRQs	*PI: F. Krauß*
2020/03	**1.45 hours**, Hobby-Eberly Telescope (HET): Studying the accretion disk signature in FSRQs	*PI: F. Krauß*
2020/01	**1.76 hours**, Hobby-Eberly Telescope (HET): Studying the accretion disk signature in FSRQs	*PI: F. Krauß*

Talks (selected)

Invited talks are marked in blue.

Jul 2021	**A Ghost (particle) story: Blazar accretion and jets**, Invited Colloquium, University Würzburg	*Online*
Jun 2021	**Ghost(-particle) stories: Multiwavelength follow-up of IceCube neutrino alerts"**, Invited talk at HEAD Frontiers Seminar Series	*Online*
Oct 2020	**X-ray view of IceCube neutrino events**, Chandra Frontiers in Time-Domain Science	*Online*
Mar 2019	**Neutrinos on ice – Blazars as counterparts to neutrinos above 100 TeV**, The New Era of Multi-Messenger Astrophysics	*the Netherlands*
Dec 2018	**Neutrinos on ice – The search for the cosmic-ray sources**, NuSTAR group meeting, Caltech, CA	*USA*
Sep 2018	**TXS 0506+056, IC 170922A, and multimessenger observations of blazars**, Invited colloquium at GRAPPA, Amsterdam	*the Netherlands*
Aug 2018	**Multimessenger & multiwavelength observations of blazars**, Invited colloquium at DESY, Zeuthen	*Germany*
Apr 2017	**AGN jets and neutrinos: multimessenger studies of blazars**, Invited colloquium at Radboud University	*the Netherlands*
Dec 2016	**VLBI monitoring and Dynamic SEDs of southern blazars**, Invited talk at HAP Workshop: Monitoring the non-thermal Universe	*Germany*
Sep 2016	**The Fermi Sky in a Multimessenger Context**, Invited talk at Neutrino Oscillation Workshop (NOW 2016)	*Italy*

Science communication

Jan 2020	**"Who you gonna call? Ghost-particle busters"**, Astronomy on Tap	*State College, PA*
Oct 2019	**Black hole demonstration**, Penn State AstroFest	*State College, PA*
Jan 2019	**Presentation and panel discussion**, Nature on Tap	*Los Alamos, NM*
Jul 2018	**Telescope observations and moon phase activity for lunar eclipse**, Lunar eclipse	*Amsterdam*
Mar 2018	**Holes in the Universe, Black holes, white holes and wormholes**, Public science communication lecture (45 minutes)	*Amsterdam*
2015–2017	**Participation in "Letters to a Pre-Scientist"**, Exchanging letters with a middle/high-school student	*USA*
2017	**Holes in the Universe, Black holes, white holes and wormholes**, Public science communication lecture (45 minutes)	*Amsterdam*
2013–2016	**Telescope observations and guided tours**, giving guided tours of the historical observatory, including observations	*Remeis Observatory, Bamberg*

Collaborations

AMON, Organizing X-ray follow-up of neutrino events

TANAMI, Multiwavelength observations and X-ray analysis

***Fermi*/LAT**, Multimessenger and multiwavelength observations of blazars, flare advocate shift duties

Scientific service

2021	**TEAM-UP Initiative**, Launching AIP TEAM-UP at Penn State, attending the implementation workshop	*Penn State University*
2020–current	**Mentoring 2–4 graduate student**, Faculty Mentoring Program	*Penn State University*
2020–2021	**Committee member**, Eberly College of Science Climate and Diversity Committee	*Penn State University*
2019–2021	**Committee member**, Astronomy & Astrophysics Department Climate and Diversity Committee	*Penn State University*
2018	**Poster judge**, PhD student poster competition at the 8th Fermi Symposium	*Baltimore*
2018–current	**Referee**, ApJ, AJ, Astroparticle Physics, Galaxies, MNRAS	*Baltimore*
2017	**Workshop organizer**, Transient Alert Mechanisms: Multimessenger follow-up symposium	*Amsterdam*
2016–2017	**Postdoc represenatative**, API PhD and Postdoc council	*Amsterdam*
2014	**Convenor and LOC**, Annual meeting of the German Astronomical Society	*Bamberg, Germany*

List of publications

Refereed publications

Corresponding/first-author papers are marked in blue.

39. *Multimessenger Gamma-Ray and Neutrino Coincidence Alerts using HAWC and IceCube sub-threshold Data*
Ayalo Solares H. A., Coutu S., DeLaunay J. J., …, **Krauß F.** et al., 2021, ApJ 906, 63.

38. *Rapid compact jet quenching in the Galactic black hole candidate X-ray binary MAXI J1535-571*
Russell T.D., Lucchini M., Tetarenko A. J., …, **Krauß F.** et al., 2020, MNRAS 498, 5772-5785.

37. *Search for high-redshift blazars with Fermi/LAT*
Kreter M., Gokus A., **Krauß F.** et al., 2020, ApJ 903, 128.

36. *On the Detection Potential of Blazar Flares for Current Neutrino Telescopes*
Kreter M., Kadler M., **Krauß F.** et al.,2020, ApJ 902, 133.

35. ***Multimessenger observations of counterparts to IceCube-190331A***
Krauß F., Calamari E., Keivani A. et al., 2020, MNRAS 497, 2553-2561.

34. *Gamma-ray emission in radio galaxies under the VLBI scope – II. The relationship between gamma-ray emission and parsec-scale jets in radio galaxies*
Angioni R., Ros E., Kadler M., …, **Krauß F.** et al., 2020, A&A 641.

33. *The Fourth Catalog of Active Galactic Nuclei Detected by the Fermi Large Area Telescope*
The Fermi-LAT collaboration, 2020, ApJ 892, 105.

32. *X-ray spectral and flux variability of the microquasar GRS 1758-258 on timescales from weeks to years*
Hirsch M., Pottschmidt K., Smith D. M., …, **Krauß F.** et al., 2020, A&A 636, A51.

31. *Apparent superluminal core expansion and limb brightening in the candidate neutrino blazar TXS 0506+056*
Ros. E, Kadler M., Perucho M., …, **Krauß F.** et al, 2019, A&A 633, L1.

30. *The unique case of the active galactic nucleus core of M87: a misaligned low-power blazar?*
Lucchini M., **Krauß F.**, Markoff S., 2019, MNRAS 489, 1633-1643.

29. *Gamma-ray emission in radio galaxies under the VLBI scope. I. Parsec-scale jet kinematics and high-energy properties of γ-ray-detected TANAMI radio galaxies*
Angioni R., Ros E., Kadler M., …, **Krauß F.** et al., 2019, A&A, 627, A148.

28. *Breaking degeneracy in jet dynamics: multi-epoch joint modelling of the BL Lac PKS 2155—304*
Lucchini M., Markoff S., Crumley P., **Krauß F.**, Connors R. M. T., 2019, MNRAS 482, 4798-4812.

27. ***Fermi/LAT counterparts for IceCube neutrinos above 100 TeV***
Krauß F., Deoskar K., Baxter C. et al., 2018, A&A 620, A174.

26. *Multimessenger observations of a flaring blazar coincident with high-energy neutrino IceCube-170922A*
The IceCube collaboration, …, **Krauß F.** et al. 2018, Science 361, eaat 1378.

25. *Extended X-ray emission in PKS 1718—649*
Beuchert T, Rodríguez-Ardila A., Moss V. A., …, **Krauß F.** et al., 2018, A&A 612, L4.

24. ***Investigating source confusion in PMN J1603—4904***
Krauß F., Kreter M., Müller C et al., 2018, A&A 610, L8.

23. *TANAMI: Tracking Active Galactic Nuclei with Austral Milliarcsecond Interferometry. II. Additional sources*
Müller C, Kadler M., Ojha R, …, **Krauß F.** et al., 2018, A&A 610, A1.

22. *First multi-wavelength campaign on the gamma-ray-loud active galaxy IC 310*
Ahnen M. L., Ansoldi S., Antonelli L. A., …, **Krauß F.** et al.,2017, A&A 603, A25.

21. *MAGIC detection of very high energy γ-ray emission from the low-luminosity blazar 1ES 1741+196*
Ahnen M. L., Ansoldi S., Antonelli L. A., …, **Krauß F.** et al.,2017, MNRAS 468, 1534–1541.

20. *Multiband Observations of the Quasar PKS 2326—502 during Active and Quiescent Gamma-Ray States in 2010–2012*
Dutka M. S., Carpenter B. D., Ojha R., …, **Krauß F.** et al.,2017, ApJ 835, 182.

19. *The MHz-peaked radio spectrum of the unusual γ-ray source PMN J1603—4904*
Müller C., Burd P. R., Schulz R., …, **Krauß F.** et al.,2016, A&A 593, L19.

18. *Significant hardening and rising shape of MeV/GeV spectrum from new TeV-emitting blazar S4 0954+65 during brightest optical flare in 2015 February*
Tanaka Y.T., Becerra Gonzalez J., Itoh R., …, **Krauß F.** et al.,2016, PASJ 68, 51.

17. *Coincidence of a high-fluence blazar outburst with a PeV-energy neutrino event*
Kadler M., **Krauß F.**, Mannheim K. et al.,2016, Nature Physics 12, 807–814.

16. ***The TANAMI Multiwavelength Program: Dynamic SEDs of Southern Blazars***
Krauß F., Wilms J., Kadler M. et al., 2016, A&A 591, A130.

15. *Radio and Gamma-ray Properties of Extragalactic Jets from the TANAMI Sample*
Böck M., Kadler,M., Müller C., …, **Krauß F.** et al, 2016, A&A 590, 40.

14. *NuSTAR and XMM-Newton Observations of the Hard X-Ray Spectrum of Centaurus A*
Fürst F., Müller C., Madsen K.K., …, **Krauß F.** et al. 2016, ApJ 819, 150.

13. *Optical-NIR spectroscopy of the puzzling γ-ray source 3FGL 1603.8−4903/PMNJ1603−4904 with X-shooter*
Goldoni P., Pita S., Boisson C., …, **Krauß F.** et al. 2016, A&A 586, 2.

12. *A variable-density absorption event in NGC 3227 mapped with Suzaku and Swift*
Beuchert T., Markowitz A., **Krauß F.** et al.,2015, A&A 584, A82.

11. *The Third Catalog of Active Galactic Nuclei Detected by the Fermi Large Area Telescope*
Ackermann M., Ajello M., Atwood W.B., …, **Krauß F.** et al.,2015, ApJ 810, 14.

10. *PSR J1906+0722: An Elusive Gamma-Ray Pulsar*
Clark C.J., Pletsch H.J., Wu J., …, **Krauß F.** et al. 2015, ApJ 809, L2.

9. *ANTARES constrains a blazar origin of two IceCube PeV neutrino events*
Adrián-Martínez S., Albert A., …, **Krauß F.** et al.,2015, A&A 576, L8.

8. *5.9-keV Mn K-shell X-ray luminosity from the decay of ^{55}Fe in Type Ia supernova models*
Seitenzahl I.R., Summa A., **Krauß F.** et al.,2015, MNRAS 447, 1484.

7. *Redshifted Fe Kalpha line from the unusual gamma-ray source PMN J1603−4904*
Müller C., **Krauß F.**, Dauser T. et al.,2015, A&A 574, A117.

6. *Black hole lightning due to particle acceleration at subhorizon scales*
Aleksić J., Ansoldi S., Antonelli L.A., …, **Krauß F.**, et al., 2014, Science 346, 1080.

5. ***TANAMI blazars in the IceCube PeV-neutrino fields***
Krauß F., Kadler M., Mannheim K. et al.,2014, A&A 566, L7.

4. *Rapid and multiband variability of the TeV bright active nucleus of the galaxy IC 310*
Aleksić J., Antonelli L.A., Antoranz P., …, **Krauß F.** et al.,2014, A&A 563, A91.

3. *The unusual multiwavelength properties of the gamma-ray source PMN J1603−4904*
Müller C., Kadler M., Ojha R., …, **Krauß F.** et al.,2014, A&A 562, A4.

2. *Multi-wavelength Observations of PKS 2142−75 during Active and Quiescent Gamma-Ray States*
Dutka M.S., Ojha R., Pottschmidt K., …, **Krauß F.** et al.,2013, ApJ 779, 174.

1. *The simultaneous low state spectral energy distribution of 1ES 2344+514 from radio to very high energies*
Aleksić J., Antonelli L.A., Antoranz P., …, **Krauß F.** et al.,2013, A&A 556, A67.

Conference proceedings (selected)

2. *The Fermi Sky in a Multimessenger Context*
Krauß F. for the *Fermi*-LAT collaboration, 2017, in: Proceedings of the Neutrino Oscillation Workshop 2016, Lecce, Italy, eds. A. Marrone, A. Mirizzi, D. Montanino; PoS(NOW2016)042

1. *TANAMI counterparts to IceCube high-energy neutrino events*
Krauß F., Wang B., Baxter C. et al. 2015, in: Proc. Fifth International Fermi Symposium, eCONF, eConf C141020.1