

Naoko Kurahashi Neilson

32 South 32nd Street, Philadelphia, PA 19104
naoko@drexel.edu
215-895-2725

1. Education

2003–2010 Stanford University, Ph.D., Advisor: Giorgio Gratta
Dissertation: “Acoustic Detection of Ultra-high Energy Neutrinos”
1999–2002 University of California, Berkeley, B.A. Physics

2. Professional Appointments

2019– Drexel University, Department of Physics
Associate Professor
2014–2019 Drexel University, Department of Physics
Assistant Professor
2010–2014 University of Wisconsin, Madison, IceCube Neutrino Observatory
Postdoctoral Research Associate

3. External Funding

NSF PHYS-2209445, “WoU-MMA:IceCube Data Analysis in the U.S. 2022-2025,” subaward,
2024-2025, **\$289K**

NSF PHYS-2131864, “BL3 Neutron Lifetime Apparatus,” subaward,
2022-2025, **\$162K**

NSF PHYS-1847827, “CAREER: Towards the First Astronomical Catalog of Neutrino Sources,”
PI, 2019-2024, **\$907K** (\$704K original funded, total \$158K in supplemental funding
in '21, '22, '23)

NSF PHYS-1607132, “Searches for Astrophysical Neutrino Sources with IceCube”,
PI, 2016-2019, **\$473K**

4. Internal Funding

Drexel Provost Award for Outstanding Scholarly Productivity – Mid-Career, 2021, \$15K
Drexel Antelo Devereux Award for Young Faculty, 2018, \$7K
Drexel Research Co-op Award, 2016, \$7K
Drexel University Career Development Award, 2015, \$7K

5. Select Peer-Reviewed Publications

Only papers that I or my students first authored are listed here

- * Complete List of Publications available by request
- * I publish as N. Kurahashi
- * IceCube publications list authors in alphabetical order

“Observation of high-energy neutrinos from the Galactic plane”, R. Abbasi et al. (IceCube Collaboration), *Science* 380 (2023) 6652

“High-Energy Extragalactic Neutrino Astrophysics” **Review Article**

Naoko Kurahashi (Drexel U.), Kohta Murase (Penn State U., University Park, IGC and Kyoto U., Yukawa Inst., Kyoto), Marcos Santander (Alabama U.)
Ann.Rev.Nucl.Part.Sci. 72 (2022), 365

“A Search for Coincident Neutrino Emission from Fast Radio Bursts with Seven Years of IceCube Cascade Events”, R. Abbasi et al. (IceCube Collaboration), *Astrophysical Journal* 946 (2023)

“Search for Astrophysical Neutrinos from 1FLE Blazars with IceCube”, R. Abbasi et al. (IceCube Collaboration), *Astrophysical Journal* 938 (2022) 1

“Constraints on Neutrino Emission from Nearby Galaxies Using the 2MASS Redshift Survey and IceCube”, M.G. Aartsen et al. (IceCube Collaboration), *Journal of Cosmology and Astroparticle Physics* 7 (2020) 042

“Search for Sources of Astrophysical Neutrinos Using Seven Years of IceCube Cascade Events”, M.G. Aartsen et al. (IceCube Collaboration), *Astrophysical Journal* 886 (2019) 1

“Neutrino emission from the direction of the blazar TXS 0506+056 prior to the IceCube-170922A alert”, M.G. Aartsen et al. (IceCube Collaboration), *Science* 361 (2018) 6398

“Search for astrophysical sources of neutrinos using cascade events in IceCube”, M. G. Aartsen et al. (IceCube Collaboration), *Astrophysical Journal* 846 (2017) 2

“Lowering IceCube's Energy Threshold for Point Source Searches in the Southern Sky”, M. G. Aartsen et al. (IceCube Collaboration), *Astrophysical Journal Letters* 824 (2016) L28

“Searches for Extended and Point-like Neutrino Sources with Four Years of IceCube Data”, M. G. Aartsen, et al. (IceCube Collaboration), *The Astrophysical Journal* 796, 109 (2014)

“Evidence for High-Energy Extraterrestrial Neutrinos at the IceCube Detector”, M. G. Aartsen, et al. (IceCube Collaboration), *Science* 342, 1242856 (2013)

6. Presentations

a. Conference Talks

International Cosmic Ray Conference *Invited Highlight Talk*
 SCAR (Scientific Conference on Antarctic Research) *Invited*

Jul 2023, Nagoya, Japan
 Aug 2022, Virtual

AAS General Meeting	<u>Invited Splinter Session</u>	Jan 2021, Virtual
APS “April” Meeting	<i>Invited, declined last minute due to COVID19 related childcare</i>	Apr 2020
Fermi Symposium	<u>Invited Plenary</u>	Nov 2018, Washington DC
APS “April” Meeting	<u>Invited Special Topics</u>	Jan 2017, Washington DC
DBD16		Nov 2016, Osaka, Japan
TeV Particle Astrophysics	<u>Invited Plenary</u>	Sep2016, CERN, Switzerland
AAS General Meeting		Jan 2016, Florida
AMON Realtime Workshop		Dec 2015, Penn State
Jefferson Lab Users’ Meeting	<u>Keynote speaker</u>	May 2015, JLab
Joint Space Institute/Univ of Maryland Workshop		Nov 2014, Annapolis, MD
Univ of Chicago/KICP High Energy Messengers		June 2014, Chicago, IL
APS April Meeting	<u>Invited Plenary</u>	April 2014, Savannah, GA
Cosmology and Particle Astrophysics		Nov 2013, Honolulu, HI
Phenomenology		May 2013, Pittsburg, PA

b. Invited Colloquia and Seminars

University of Victoria	Physics Colloquium	Nov 2023
Yale	Physics Club	Oct 2023
MIT	Physics Colloquium	Sept 2023
Lawrence Berkeley National Labs	Research Progress Meeting	Sept 2023
Hong Kong University	Physics Colloquium	Sept 2023
Fermilab	Neutrino Seminar	May 2023
NASA Goddard	Astrophysics Colloquium	Apr 2023
Harvard University	Physics Colloquium	Mar 2023
Kyoto University YITP	Seminar	Aug 2022
NASA Goddard SFC	Astrophysics Colloquium	Feb 2021
SUNY Stony Brook	Physics Colloquium	Nov 2019
University of Maryland	Physics Colloquium	Nov 2018
Duke University	Physics Colloquium	Oct 2018
Temple University	Physics Colloquium	Feb 2018
Michigan State University	High Energy Physics Seminar	Mar 2017
Yale University	Nuclear Particle Seminar	Jan 2017
UCLA	Particle Physics Seminar	Jan 2016
MIT	Seminar	Dec 2015
University of Maryland	Seminar	Nov 2015
University of Tennessee, Knoxville	Physics Colloquium	Oct 2015
NASA Goddard Space Flight Center	Astrophysics Colloquium	Sep 2015
Northeastern University	Physics Colloquium	Sep 2015
University of Rochester	Physics Colloquium	Apr 2015
UMass Amherst	Particle/Nuclear Seminar	Apr 2015
Harvard University	LPPC Seminar	Mar 2015
Princeton/Institute for Advanced Study	joint Astronomy Colloquium	Mar 2015
Virginia Tech	Physics Colloquium	Oct 2014
University of Pennsylvania	HEP Seminar	Oct 2014
Argonne National Laboratory	HEP Division Seminar	Oct 2014
Drexel University	Physics Colloquium	Mar 2014

SUNY Albany	Physics Colloquium	Mar 2014
Georgia Tech	Physics Colloquium	Feb 2014
MIT	Lunchtime Seminar	Feb 2014
University of California, San Diego	Astrophysics Seminar	Feb 2014
Stanford University	SITP Seminar	Dec 2013
University of Michigan	HEP Seminar	Dec 2013
Columbia University	Physics Seminar	Mar 2013

7. Service

a. University and Department Services

- CANOPI (Creating a Narrative of Professional Involvement) mentorship program for faculty development of professional involvement narratives, mentor ('23-) hosted by the Office of Faculty Advancement, Provost Office
- 2023 AAAS Annual Meeting in Washington DC, Drexel University Boot Presenter, hosted by the Office of Research & Innovation
- Department's Graduate Student Academic Committee member ('20/21, '21/22)
- Department's Graduate Student Admissions Committee member ('18/19, '19/20)
- Department's New Faculty Search Committee member ('21/22)
- Department's Teaching Professor Promotion Committee member ('19/20, '20/21)
- Physics Department Head Reappointment Committee member ('19/20)
- Qualifying Exam, Thesis Advisory (TAC), and PhD Defense Committee member for 5 to 10 graduate students every year
- College of Arts and Sciences Advisory Committee for Promotion of Teaching Faculty ('19/20)
- Under-represented minority (URM) faculty interest group (2016-2017)
- Panel member at New Faculty Orientation's "What I wish I knew as new faculty" (2018, 2019, 2020, 2021) hosted by Office of Faculty Affairs (now Faculty Advancement)
- University review and selection committee member of the Career Development Award (2016, 2017)
- Facilitator for ColorBrave Campus Dialogs for Faculty, an event by the Office of Faculty Affairs aimed to educate and empower faculty to have a purposeful discussion and address the issue of racial inequities (2018)

b. Professional Activities

- IceCube Collaboration Deputy Analysis Coordinator 2022-2024 (will transition to Analysis Coordinator in 2024)
- APS Midatlantic Section Executive Committee, Member-at-large (2023-)
- Session Convener, APS April Meeting (2022, 2017)
- Ad hoc proposal reviewer for NSF SBIR/STTR, and Particle Astrophysics (PA) (2021)
- Swarthmore College Honors Examiner (2020)
- PhD Dissertation Committee Member for Sreetama Goswami, University of Alabama, Physics, 2021- 2023 (PhD awarded 2023)
- Lecturer at VERITAS and CTA at Barnard and Columbia Universities Summer Colloquium Series (2020)

- IceCube Collaboration Mentorship Program, Mentor (2021-)
- IceCube Collaboration Inaugural Ombudsperson 2018-2020
- Linda Hall Library International Advisory Committee Member, 2021-, Linda Hall Library is the largest privately endowed STEM library in the US in Kansas City, MS
- Started a free IceCube Immersion Program for local high school students, 2015, 2016, 2017

c. Public Talks

- Press Event of 2023 Science paper, hosted at Drexel University, viewed over 24k times on YouTube since the live event – June 2023
<https://www.youtube.com/live/35YUzuhadOs?feature=share>
- Chiba University, Chiba Japan, Public Outreach Talk and Event for Women and girls interested in physics, hybrid event participation from all across Japan – Oct 2022
event website: <http://www.icehap.chiba-u.jp/publicrelations/lecture/20221022.html>
event report: <http://www.icehap.chiba-u.jp/publicrelations/lecture/20221022report.html>
- Perimeter Institute for Theoretical Physics, Canada, Public Lecture Series – Oct 2021
Live lecture online to over 5,000 worldwide audiences, video recording has over 14k views.
<https://youtu.be/DkkSzIQ26JI>
- Wagner Free Institute of Science of Philadelphia – Nov 2018, Annual Westbrook Free Lectureship. Established in the mid-19th century for free science education to Philadelphia, the institute's open lecture series has continued since 1912. I was the 2018 speaker.
- Intrepid Sea, Air & Space Museum, New York – May 2016, Family Astronomy Night
- Sacred Heart Academy Science Symposium for Girls, Honolulu – Feb 2016, keynote speaker, ~350 middle school students and parents attended from the Hawaiian Islands
- Linda Hall Library, Kansas City – Oct 2015, evening public lecture at this largest privately endowed library of science, engineering, and technology in the US to over 400 people
- Academy of Notre Dame de Namur STEM Day, Villanova, PA – March 2015, keynote speaker talk to ~500 middle and high school girls

d. Select Media Interviews

- The New York Times, “Neutrinos Build a Ghostly Map of the Milky Way.” June 2023
<https://www.nytimes.com/2023/06/29/science/neutrinos-milky-way-map.html?smid=url-share>
- CNN, “An observatory in Antarctica reveals ‘ghostly’ new portrait of the Milky Way,” June 2023
<https://www.cnn.com/.../neutrino-portrait.../index.html>
- BBC, “Milky Way: Icy observatory reveals 'ghost particles’,” June 2023
<https://www.bbc.com/news/science-environment-66049330>
- Reuters, June 2023
<https://www.reuters.com/.../with-neutrinos-scientists.../>
- Philadelphia Inquirer, “South Pole observatory reveals hidden view of the Milky Way with help from Drexel physicists,” June 2023
<https://www.inquirer.com/science/icecube-neutrino-drexel-milky-way-20230629.html>
- Scientific American, “In a First, Scientists See Neutrinos Emitted by the Milky Way,” June 2023

<https://www.scientificamerican.com/article/in-a-first-scientists-see-neutrinos-emitted-by-the-milky-way/>

- National Geographic, “Extreme ‘ghostly’ particles detected in our galaxy for the first time,” June 2023
<https://www.nationalgeographic.com/premium/article/neutrinos-milky-way-galaxies-ice-cube-discovery>
- APS Physics, “Milky Way Viewed through Neutrinos,” June 2023
<https://physics.aps.org/articles/v16/115>
- Symmetry Magazine, “Get to know 10 early-career experimentalists”, Nov 26, 2019
<https://www.symmetrymagazine.org/article/get-know-10-early-career-experimentalists>
- BBC World Service, “New Neutrino Source Found”, July 12, 2018
- NPR, All Things Considered, July 12, 2018
- CNN, “‘Ghost particle’ found in Antarctica provides astronomy breakthrough”, July 12, 2018
- Wall Street Journal, “Scientists Track Neutrinos Through Ice to Their Source in the Cosmos”, July 12, 2018
- Newsweek, “High Energy Neutrino Source Discovered, Research Heralds ‘New Era’ for Particle Physics”, July 12, 2018
- Philadelphia Inquirer, “For the first time, scientists harness ‘ghost particles’ to study the universe and its black holes”, July 12, 2018
- Christian Science Monitor, “Neutrino demonstration heralds a new way of observing the cosmos”, July 12, 2018
- Vox.com, “How a single neutrino just helped crack a 100-year-old cosmic ray mystery”, July 12, 2018
- Science News, “A high-energy neutrino has been traced to its galactic birthplace”, July 12, 2018
- Symmetry Magazine, “Scientists trace high-energy cosmic neutrino to its birthplace” July 12, 2018
- Drexel Now, “Drexel Astrophysicist Proves the Origin of Neutrinos”, July 12, 2018
- Symmetry Magazine “Casting a net for neutrinos”, Feb 18, 2016
- Drexel Ask Magazine’s “25 Faces For 25 Years”, 2015 issue
- Scientific America “Exotic space particles slam into buried South Pole Detector”, Apr 9, 2014
- Christian Science Monitor “Subatomic particles found in mile deep ice are of interstellar origins”, Nov 21, 2013
- Popular Mechanics “Found: Neutrinos From Beyond the Solar System”, Nov 21, 2013
- Fox News Science “Extraterrestrials on Earth: Scientists find outer space stuff at South Pole”, Nov 21, 2013
- NBC.com “Alien neutrinos reveal new frontier in astronomy at Antarctica’s IceCube”, Nov 21, 2013