

Naoko Kurahashi Neilson
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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

2024- Drexel University, Department of Physics
Professor
2019–2024 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-2407652, “MRI: Research Infrastructure: Track #2 Development of Pacific Ocean Neutrino Experiment Trigger System,” CoPI \$1.56M, subaward 2024-2026, **\$276K**

NSF PHYS-2209445, “WoU-MMA:IceCube Data Analysis in the U.S. 2022-2025,” CoPI \$10.4M, subaward 2024-2025, **\$289K**

NSF PHYS-1847827, “CAREER: Towards the First Astronomical Catalog of Neutrino Sources,” PI, 2019-2024, **\$933K** (\$704K original funded, total \$158K in supplemental funding in '21, '22, '23, \$26K in '24)

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 Refereed Publications

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

a. First/Main Author Refereed Publications

- * Papers that I or my group members are the main authors are listed here

“From the Dawn of Neutrino Astronomy to A New View of the Extreme Universe”, C. A. Argüelles, F. Halzen, N. Kurahashi, Submitted to PRX, arXiv:2405.17623 (2024)

“All-sky Search for Transient Astrophysical Neutrino Emission with 10 Years of IceCube Cascade Events”, R. Abbasi et al. (IceCube Collaboration), *Astrophysical Journal* 967 (2024)

“Citizen science for IceCube: Name that Neutrino”, R. Abbasi et al. (IceCube Collaboration), *Eur.Phys.J.Plus* 139 (2024) 6, 533

“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)

“Search for Acoustic Signals from Ultrahigh Energy Neutrinos in 1500 km³ of Sea Water”, N. Kurahashi, J. Vandenbroucke, and G. Gratta, Physical Review D 82, 073006 (2010)

6. Presentations

a. Conference Talks

11 th International Fermi Symposium		Sep 2024, College Park, MD
Neutrino2024	<i>Invited Review Talk</i>	Jun 2024, Milan, Italy
International Cosmic Ray Conference	<i>Invited Highlight Talk</i>	Jul 2023, Nagoya, Japan
SCAR (Scientific Conference on Antarctic Research)	<i>Invited</i>	Aug 2022, Virtual
AAS General Meeting	<i>Invited Splinter Session</i>	Jan 2021, Virtual
APS “April” Meeting	<i>Invited, declined last minute due to COVID19 related childcare</i>	Apr 2020
Fermi Symposium	<i>Invited Plenary</i>	Nov 2018, Washington DC
APS “April” Meeting	<i>Invited Special Topics</i>	Jan 2017, Washington DC
DBD16		Nov 2016, Osaka, Japan
TeV Particle Astrophysics	<i>Invited Plenary</i>	Sep2016, CERN, Switzerland
AAS General Meeting		Jan 2016, Florida
AMON Realtime Workshop		Dec 2015, Penn State
Jefferson Lab Users’ Meeting	<i>Keynote speaker</i>	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	<i>Invited Plenary</i>	April 2014, Savannah, GA

b. Invited Colloquia and Seminars

University of Michigan	Physics Colloquium	Apr 2024
NASA Goddard	Scientific Colloquium	Apr 2024
Temple University	Physics Colloquium	Feb 2024
University of Virginia	HEP Seminar	Jan 2024
Michigan State University	HEP Seminar	Jan 2024
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

7. Teaching

a. Undergraduate Courses Taught

Fall Quarter 2023/24	UNIV 101 – The Drexel Experience
Fall Quarter 2023/24	UNIV 201 – Academics and Careers
Winter Quarter 2023/24	PHYS 492 – Senior Research II
Spring Quarter 2023/24	PHYS 493 – Senior Research III
Fall Quarter 2021/22	UNIV 101 – The Drexel Experience
Fall Quarter 2021/22	UNIV 201 – Academics and Careers
Fall Quarter 2020/21	UNIV 101 – The Drexel Experience
Fall Quarter 2019/20	PHYS 491 – Senior Research I
Fall Quarter 2019/20	UNIV 201 – Academics and Careers
Winter Quarter 2018/9	PHYS 201 – Fundamentals of Physics III
Fall Quarter 2016/7	UNIV 101 – The Drexel Experience
Fall Quarter 2015/6	UNIV 101 – The Drexel Experience
Fall Quarter 2015/6	PHYS 223 – Modern Physics Laboratory
Winter Quarter 2014/5	PHYS 201 – Fundamentals of Physics III

b. Graduate Courses Taught

Spring Quarter 2021/22	PHYS 517 – Quantum Mechanics II
Winter Quarter 2021/22	PHYS 516 – Quantum Mechanics I

Spring Quarter 2020/21	PHYS 517 – Quantum Mechanics II
Winter Quarter 2020/21	PHYS 516 – Quantum Mechanics I
Spring Quarter 2019/20	PHYS 517 – Quantum Mechanics II
Winter Quarter 2019/20	PHYS 516 – Quantum Mechanics I
Winter Quarter 2018/9	PHYS 516 – Quantum Mechanics I
Spring Quarter 2017/8	PHYS 517 – Quantum Mechanics II
Winter Quarter 2017/8	PHYS 516 – Quantum Mechanics I
Spring Quarter 2016/7	PHYS 517 – Quantum Mechanics II
Winter Quarter 2016/7	PHYS 516 – Quantum Mechanics I

8. Undergraduate Trainees

Andrew Phillips	Drexel senior thesis student 2023/24 co-advisor
Joshua Weisberg	Drexel senior thesis student 2021/22
Mike Bogert	Drexel senior thesis student 2020/21
Johannes Wagner	Drexel co-op student 2018/19, senior thesis student 2019/20 on to PhD program at Univ. of California, Berkeley
Sarah Coccia	Drexel senior thesis student 2018/19 co-advisor
Brean Prefontaine	Drexel research student 2015/16, senior thesis student 2016/17, BS 2017 on to PhD program at Michigan State
Steve Sclafani	Drexel post-bac student 2016/17, on to PhD program at Drexel
Erixen Cruz	Drexel STAR student summer 2016, co-op student 2017 (included research abroad at Germany on IceCube), senior thesis student 2019/20
Mark Giovinazzi	Drexel co-op student 2016, BS 2018 on to PhD program at UPenn
Edward Callaghan	Drexel research student 2015/16, BS 2017 on to PhD program at Caltech
Daniel Douglas	Drexel co-op student 2015, senior thesis student 2015/16, BS 2016 on to PhD Program at Michigan State
Rachel Buttry	Drexel STAR student summer 2015, BS 2019 expected
Eesha Das Gupta	Drexel STAR student summer 2015, BS 2018
William Giang	Drexel senior thesis student 2014/15, BS 2015 on to PhD program at Univ. of Alberta

9. Graduate and Postdoctoral Trainees

Riya Shah	Drexel University PhD 2025 expected
Nathan Branson	Drexel University PhD 2028 expected
Luna (XinYue) Kang	Drexel University PhD 2024, <i>Thesis: “Searching for Neutrino Emission from the Galactic Center Region,”</i> on to private sector data scientist
Michael Campana	Drexel University PhD 2024, <i>Thesis: “New Hypotheses and New Methods: Searching for Sources of Astrophysical Neutrinos from MeV-Gamma Ray Blazars and a Binned Likelihood Analysis of the Galactic Plane”</i>
Michael Kovacevich	Drexel University PhD 2024, <i>Thesis: “A Search for Neutrino Flares with 10 years of IceCube’s Cascade Events,”</i> on to private sector data scientist
Steve Scalfani	Drexel University PhD 2023, <i>Thesis: “Observation of Neutrinos from the Milky Way Galaxy,”</i> on to University of Maryland postdoc

Elizabeth Warrick	Drexel University MS 2023 (co-advisor), Thesis: <i>“Building a Citizen Science Project to Investigate IceCube Data,”</i> on to University of Alabama PhD student
Michael Richman	Drexel University Postdoc, 2015-2019, on to private sector data scientist
Lizz Wills	Drexel University PhD 2018, Thesis: <i>“Probing Cosmic Ray Anisotropy In the Northern Hemisphere with Atmospheric Neutrinos,”</i> on to University of Montreal postdoc
Ben Relethford	Drexel University graduate student 2014-2018, on to private sector data scientist
Thorben Menne	Dortmund University, Germany, came to Drexel for 3 months in 2017 with scholarship from the German Academic Exchange Service (DAAD), PhD 2018

10. Others

a. University and Department Services

- CANOPI mentorship program sponsored through the provost office, mentor (2023-)
- Title VI Compliance and Academic Freedom Advisory Committee member (2024)
- Drexel Provost Award for Outstanding Scholarly Productivity Reviewer (2024)
- College of Arts and Sciences Research Committee (starting Fall 2024)
- AAAS Washington DC conference Drexel Booth talks (2023)
- Departmental Graduate Student Academic Committee (2020-)
- New Faculty Search Committee (2021)
- Teaching Professor Promotion Committee (2019-21)
- Graduate Student Admissions Committee (2017-2020)
- Physics Department Head Reappointment Committee member (2019)
- College of Arts and Sciences Advisory Committee for Promotion of Teaching Faculty (2019/20)
- Faculty Annual Review (FAR) Review Committee (2016)
- Physics Department Head Search Committee (2015)
- Qualifying and Thesis Advisory (TAC) Committee member for about 5 to 10 graduate students every year, senior thesis committee to 0 to 3 students each year
- Under-represented minority (URM) faculty interest group (2016-2017)
- Panel member at New Faculty Orientation’s “What I wish I knew as new faculty” (2016, 2017, 2018, 2019, 2020, 2021)
- Panel member as past recipient at the Career Development Award Information Session (2016, 2017)
- Review and selection committee for the Career Development Award (2016, 2017)
- Review of the Provost Scholarly Productivity Award (2023)
- 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

- APS Fellow

- IceCube Collaboration Analysis Coordinator 2024-
- IceCube Collaboration Deputy Analysis Coordinator 2022-2024
- IceCube Collaboration Trigger, Filter, Transmission (TFT) Committee Chair 2020-2022
- IceCube Collaboration Ombudsperson 2019-2021
- IceCube Collaboration Point Source (Neutrino Sources) Working Group Lead 2013-2019
- IceCube Collaboration Early Career Representative on the Collaboration Board 2013
- APS Division of Astrophysics Executive Committee, Member-at-large, 2024-2026
- APS Midatlantic Section Executive Committee, Member-at-large, 2023-2025
- NASA Fermi Gamma-Ray Telescope User Group Member 2024-
- Organizing member and attendee of the MidACT conference for mid-career women in large physics collaborations, sponsored by the Heising-Simons Foundation, University of Tennessee, Knoxville, March 2024
- Ad hoc proposal reviewer for NSF Particle Astrophysics, 2021, 2017
- Ad hoc proposal reviewer for NSF SBIR/STTR, 2021
- Linda Hall Library International Advisory Committee Member, 2021-current, Linda Hall Library is the largest privately endowed STEM library in the US
- Started a free IceCube Summer Immersion Program for Philadelphia high school students (ran 2015-2018)
- Started IceCube Collaboration's Women's Lunch (now Women and Gender Minorities Group)
- Started IceCube Collaboration's diversity group (now the DEI Working Group)

c. Public Talks

- Delaware Valley Amateur Astronomer Meeting Speaker, January 2024
- Villanova University Sigma Pi Sigma Physics Honors Society Induction Ceremony Speaker April 2024
- Press Conference Talk of 2023 *Science* paper Observation of the Galactic Plane in Neutrinos, hosted at Drexel University, viewed over 24k times on YouTube since the live event – June 2023
- Perimeter Institute for Theoretical Physics, Public Lecture Series, “A New View of the Universe from the Earth's South Pole” viewed over 14k times on YouTube since the live event – Oct 2021
- Wagner Free Institute of Science's Annual Westbrook Free Lectureship, “Tracing Neutrinos Through the Cosmos” historical lecture series started in 1912 – Nov 2018,
- 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. Media Interviews

- Science & Vie, “Neutrino Une nouvelle astronomie est née!” November 2023 Issue
- New York Times, “Neutrinos Build a Ghostly Map of the Milky Way”, June 29, 2023

- CNN, “An observatory in Antarctica reveals ‘ghostly new portrait of the Milky Way’”, June 29, 2023
- BBC, “Milky Way: Icy observatory reveals ‘ghost particles’”, June 30, 2023
- National Geographic, “Extreme ‘ghostly’ particles detected in our galaxy for the first time”, June 29, 2023
- Reuters, “With neutrinos, scientists observe our galaxy in a whole new way”, June 29 2023
- Philadelphia Inquirer, “South Pole observatory reveals hidden view of the Milky Way with help from Drexel physicists”, June 29 2023
- Scientific America, “In a First, Scientists See Neutrinos Emitted by the Milky Way”, June 29 2023
- Science News, “Neutrinos offer a new view of the Milky Way”, June 29 2023
- Symmetry Magazine, “Get to know 10 early-career experimentalists”, Nov 26, 2019
- 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
- Wisconsin Public Radio, Larry Meiller Show, Dec 12, 2011