

Justin Vandembroucke

Curriculum Vitae

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Physics Department
University of Wisconsin
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Education

- Ph.D. in Physics. December 2009.
University of California, Berkeley, CA
Adviser: P. Buford Price
Thesis: Acoustic detection of astrophysical neutrinos in South Pole ice
- M.S. in Physics. December 2006.
University of California, Berkeley, CA
Adviser: P. Buford Price
- B.A. in Physics with Honors (minor in Mathematics). June 2002.
Stanford University, Stanford, CA
Adviser: Giorgio Gratta

Professional Employment

- Associate Professor. 2019 – Present.
University of Wisconsin. Madison, WI.
- Assistant Professor. 2013 – 2019.
University of Wisconsin. Madison, WI.
- NASA Einstein Fellow. 2012 – 2013.
Kavli Institute for Particle Astrophysics and Cosmology. SLAC National
Accelerator Laboratory. Menlo Park, CA.
- Kavli Fellow. 2009 – 2013.
Kavli Institute for Particle Astrophysics and Cosmology. Stanford University.
Stanford, CA.
- Graduate Student Researcher. 2003 – 2009.
Physics Department. University of California. Berkeley, CA.
- Graduate Student Instructor. 2003 – 2004.
Physics Department. University of California. Berkeley, CA.
- Undergraduate Research Assistant. 2000 – 2003.
Physics Department. Stanford University. Stanford, CA.
- Physics and Mathematics Tutor. 1999-2000.
Undergraduate Advising Center. Stanford University. Stanford, CA.

Undergraduate Research Assistant. 2000.

Physics Department. University of Chicago. Chicago, IL.

High School Summer Research Assistant. 1997-1999.

Materials Science & Engineering Department. Northwestern University.
Evanston, IL.

Grants

- NSF Award #2013102, “WoU-MMA: Astrophysics with a new very-high-energy gamma-ray telescope,” 8/15/20-present. \$508,833.
- UW 2020 (Wisconsin Alumni Research Foundation), “Cracking the structure of ice: establishing a cryogenic electron backscatter diffraction and Raman capability at UW–Madison”, 2020-present.
- NSF Award #1913607, “WoU-MMA: IceCube Data Analysis in the U.S.”. 9/1/19-present. \$10,598,850 (U.S total).
- NSF Award #1828168, “MRI Consortium: Development of a wide field-of-view camera for the Schwarzschild-Couder gamma-ray telescope”, 9/1/18-8/31/21. \$2,195,390 (NSF total), \$370,589 (Vandenbroucke UW–Madison component).
- UW 2020 (Wisconsin Alumni Research Foundation), “Instrument development to study the highest energy photons in the universe”, 5/1/18-4/30/20. \$299,996.
- NSF Award #1707945, “Multi-messenger Astrophysics with the Cherenkov Telescope Array”, 7/15/17-6/30/20. \$405,000.
- Wisconsin Alumni Research Foundation, “Commissioning a prototype telescope to detect the highest energy photons”, 7/1/17-6/30/18. \$42,270.
- QuarkNet at UW–Madison. 9/1/14-8/31/17. \$35,258.80.
- Madison Teaching and Learning Excellence, UW–Madison, 2017-2018. \$4,500.
- Knight Foundation Prototype Fund, 2014. \$35,000 for DECO development.
- American Physical Society’s Public Outreach and Informing the Public Grant, “Cosmic rays and radiation at home and in the classroom.” January 2014. \$5,000.
- American Physical Society’s Public Outreach and Informing the Public Grant, “Cosmic-ray Collecting Cell-phone Cameras.” January 2012. \$8,000.
- Simon-Strauss Foundation, \$7,000 for the Distributed Electronic Cosmic-ray Observatory. 2014.
- With Albrecht Karle, UW–Madison program to connect alumni mentors with undergraduates, \$2,000.

Honors and Awards

- UW–Madison Honored Instructor. 2014.
- NASA Einstein Fellowship. 2012-2013.
- Lawrence Berkeley National Laboratory Chamberlain Fellowship (declined). 2012.
- Kavli Fellowship. 2009-2012.
- United States Antarctic Service Medal. 2011.
- National Science Foundation Graduate Research Fellowship. 2004-2007.

- Stanford University Firestone Medal for excellent undergraduate research. 2002.
- Stanford President's Scholar. 1998-2002.
- Best Materials Paper published in Microscopy and Microanalysis. Awarded by the Microscopy Society of America. 2000.
- Community Service Writing Award, Stanford University. 1999.
- John Pierce Mitchell Scholarship. 1999.
- Robert C. Byrd Honors Scholarship. 1998-1999.
- Evanston Township High School Alumni Scholarship. 1998-1999.
- Westinghouse (now Intel) Science Talent Search Semi-Finalist. 1998.
- American Association of Physics Teachers Outstanding Student. 1998.
- Bausch & Lomb Honorary Science Award. 1998.
- National Merit Finalist. 1997.
- Tandy Technology Scholars nominee. 1997.
- John Dewey Philosophy Award for love of learning. 1994.

Teaching

The Discussion Project participant. 2018.

UW–Madison Teaching and Excellence (MTLE) Fellow. 2016.

UW–Madison (as Assistant and Associate Professor)

- Physics 115: Energy (First-year Interest Group 15: Energy, Climate, & Environment)
 - Fall 2019
- Physics 115: Energy (standard lecture format)
 - Spring 2014, Fall 2016, Fall 2017, Spring 2018, Fall 2018, Spring 2020, Fall 2020, Fall 2021
- Physics 407: Advanced Laboratory
 - Spring 2016
- Physics 736: Experimental Methods in Nuclear, Particle, and Astro Physics
 - Spring 2015, Spring 2017, Spring 2019, Spring 2021, Spring 2022
- Physics 772: High Energy Astrophysics
 - Fall 2022 (planned)

UC–Berkeley (as Graduate Student Instructor)

- Physics 10: Physics for Future Presidents
 - Fall 2003
- Physics 7a: Introductory Mechanics
 - Spring 2004
- English teacher. Pokhara, Nepal. Summer 2000

Mentoring

Postdoctoral scholars and engineers

- Thomas Meures, UW Madison postdoctoral engineer. 2016-present.
- Donglian Xu, UW Madison postdoctoral researcher. 2015-present.

- Keith Bechtol, UW Madison Bahcall Fellow, 2015-2016.
- Peter Karn, UW Madison postdoctoral researcher. 2014-2016.
- Abhishek Desai, UW Madison Bahcall Fellow, 2019-present.
- Aswathi Balagopal, UW Madison postdoctoral researcher. 2020-present.

PhD students

- James Bourbeau, UW Madison graduate student. 2018-2019.
- Matthew Meehan, UW Madison graduate student. 2014-2019.
- Sam Fahey, UW Madison graduate student. 2014-2018.
- Alex Pizzuto, UW Madison graduate student. 2018-2022.
- Raamis Hussain, UW Madison graduate student. 2018-2021.
- Leslie Taylor, UW Madison graduate student. 2017-2021.
- Brent Mode, UW Madison graduate student. 2019-present.
- Luca Riitano, UW Madison graduate student. 2021-present.
- Jessie Thwaites, UW Madison graduate student. 2021-present.

Master's students

- Megan Wachtendonk, UW Madison graduate student. 2017-2018.
- Brendan Krull, UW Madison graduate student. 2016-2018.
- Miles Winter, UW Madison graduate student. 2015-2017.

Undergraduate students (UW Madison)

- Alex Tellez, UW Madison undergraduate and Thaxton Fellow. 2022-present.
- Runze Li, UW Madison undergraduate. 2019-present.
- Robijn (Ruby) Kleijwegt, UW Madison undergraduate. 2019-2021.
- Rachel Fedora, UW Madison undergraduate. 2016-2018.
- Colin Adams, UW Madison undergraduate. 2015-2018.
- Cassidy Schneider, UW Madison undergraduate. 2015-2018.
- Tianyao Wu, UW Madison undergraduate. 2013-2016.

NSF REU students

- Cassie Stevens, Westminster College. 2020.
- Roberto Moncada, City College of New York undergraduate. 2016.
- Emily Witt, St Olaf undergraduate. 2015.
- Elizabeth Tarantino, Case Western Reserve Univ. undergraduate. 2014.

Non-REU summer students

- Blake Gally. Cornell University undergraduate. 2019.

Undergraduate students (Stanford/SLAC)

- Renato Quagliani, SLAC-INFN exchange program. 2012.
- Timothy Joubert, SLAC SULI (Science Undergraduate Laboratory Internship) program. 2012.
- Margaret Murphy, STAR (Science Teacher and Researcher) program. 2012.

- Ariel Levi Simons, STAR (Science Teacher and Researcher) program. 2010. Resulted in one publication (*TARGET: A multi-channel digitizer chip for very-high-energy gamma-ray telescopes*) and several successful grant proposals including two APS Public Outreach and Informing the Public Grants.

Service

- PhD defense committee for UW graduate students: Jonathan Eisch (2014), Laura Gladstone (2014), Jakob van Santen (2014), Chris Weaver (2015), Kelsey Morgan (2015), Antonia Hubbard (2015), Tova Yoast-Hull (2015), Frank McNally (2015), Zachary Pierpoint (2016), Ian Wisher (2016), Ali Kheirandish (2016), Kyle Jero (2017), Leonardo Rivera (2017), Daniel Enderich (2018), Sam Fahey (2018), Zach Griffith (2018), Matthew Meehan (2019), James Bourbeau (2019), Raamis Hussain (2021), Leslie Taylor (2021), Alex Pizzuto (2022), Robert Morgan (2022)
- PhD defense committee for non-UW graduate students: Chujie Chen, Georgia Tech (2022 planned)
- Prelim committee for UW graduate students: Moriah Tobin (2013), Kyle Jero (2014), Ali Kheirandish (2015), Joe Olson (2016), Zach Griffith (2016), Matthew Meehan (2016), Leonardo Rivera (2016), Daniel Enderich (2016), Shaun Alsum (2016), Sam Fahey (2017), Sarah Mancina (2017), Leslie Taylor (2018), Raamis Hussain (2018), John Dodson (2019), Jonathan Nikoleyczik (2019), Harsha Gurram (2019), Manuel Silva (2019), Alex Pizzuto (2019), Robert Morgan (2019), Doug Endrizzi (2019), Mitch McNanna (2019), Jay Chan (2021), Yujun Choi (2021), Brent Mode (2021), John Podczerwinski (2021),
- IceCube Neutrino Sources working group co-convener, 2019-2022.
- CTA Schwarzschild-Couder Telescope camera working group co-convener, 2013-present.
- Peer reviewer for scholarly journals:
 - Nature
 - Physical Review Letters
 - The Astrophysical Journal
 - Astroparticle Physics
 - Nuclear Instruments and Methods A
 - Monthly Notices of the Royal Astronomical Society Letters
 - Advances in Space Research
 - Astronomy & Astrophysics
 - Journal of Astronomical Telescopes, Instruments, and Systems
 - Sensors
 - Galaxies
 - Universe
 - Applied Sciences
 - Progress of Theoretical and Experimental Physics
- Grant proposal reviewer, UW–Madison Office of the Vice Chancellor for Research and Graduate Education

- NASA review panel member; NASA review panel chair
- NSF reviewer
- National Science and Engineering Research Council of Canada (NSERC) reviewer
- Convener, International Cosmic Ray Conference, 2021.
- Local organizing committee, International Cosmic Ray Conference, 2019.
- Cosmic-ray working group convener, Fermi LAT collaboration, 2012-2013.
- Convener, APS April meeting, 2017.
- Organizing committee, IceCube Particle Astrophysics Symposium, 2015.
- Scientific advisory committee, Multi-messenger Astronomy in the era of PeV Neutrinos (MAPnu) conference. Annapolis, MD. 2014.
- Convener, Cosmic Ray Anisotropy (CRA) conference, 2013.
- Convener, TeV Particle Astrophysics (TeVPA) conference, 2013.
- Coordinator, KIPAC@10: Big Questions in Particle Astrophysics and Cosmology, 2013.
- Organizing committee, IceCube Particle Astrophysics Symposium, 2013.
- Coordinator, Nuclear/Particle/Astro/Cosmo (NPAC) Forum. UW Madison, 2013-2016.
- Coordinator, Astrophysics Colloquium. Stanford University, 2010-2012.
- Member, Student-Faculty Committee. Physics Department, UC Berkeley. 2004.
- President, Society of Physics Students chapter. Stanford University. 2001-2002.
- Co-convener, First Workshop on Acoustic Cosmic Ray and Neutrino Detection. Stanford University, 2003.
- Student member, K-12 Science Standards committee. Evanston, IL. 1998.

Public Outreach

- Speaker at American Astronomical Society press briefing. Detection of the Crab Nebula using an innovative gamma-ray telescope. June 1, 2020.
- Speaker at Wednesday Night at the Lab. UW Madison. 2018.
- Hosted Reddit “Ask me anything” about the evidence for neutrinos from a blazar. July 12, 2018.
- Hosted UW–Madison auditorium streaming of NSF press conference on neutrinos from a blazar, providing introductory context and answering questions. July 12, 2018.
- UW Madison Physics Outreach and Museum Committee member, 2017-2018
- UW Madison Physics Outreach and Museum Committee Chair, 2015-2017
- PI for UW Madison participation in QuarkNet. Includes summer internship for four high school students, summers of 2015-2017.
- WIPAC high school internship program. UW Madison. 2013-2017.
- Multiple interviews on Milwaukee Public Radio and WORT-FM. 2016-2018.
- Speaker at Milwaukee Public Museum. November 2017.
- Speaker at Rauch Planetarium (public science museum) about black holes and exploding stars. March 2012.
- Speaker at Tri-Valley Stargazers (amateur astronomy club) about Fermi Gamma-ray Space Telescope science. October 2011.

- Speaker at Francis Parker High School (Chicago, IL) about life and science at the South Pole. December 2008.
- Volunteered for Community Resources for Science. Guest science teacher at Alameda County public elementary schools. 2008-2009.
- Delivered four public talks in the Bay Area about Antarctic science. 2006-2008.
- Visited elementary and high schools to teach Antarctic science. 2006-2008.
- Corresponded as pen pal with elementary students. Discussed life as a Polar scientist while at South Pole Station. 2006-2007.
- Organized visit by elementary school students to UC Berkeley labs in physics, astronomy, chemistry, and biology. 2007.
- Taught in elementary schools in East Palo Alto. Science and Environmental Education (SEEd) program. 2001-2002.
- Volunteered for Henry's Place (after school science program, East Palo Alto). 1998-1999.

Research Experience

IceCube Neutrino Observatory. 2003 – 2009 and 2013 – Present

- Neutrino Sources Working Group co-lead, 2019-present
- Publication committee member, 2014 – 2019
- Triggering, filtering, and transmission (TFT) board member, 2016 – present
- Led and leading several analyses searching for neutrinos from fast radio bursts
- Searching for neutrino emission from novae
- Following up ANITA neutrino candidates
- Leading fast analysis of IceCube in response to interesting astrophysical events detected by other telescopes
- Member of construction team during three seasons at South Pole Station, 2005-2008
- Designed, constructed, calibrated, and deployed UV laser calibration device that simulated a Cherenkov cone produced by a neutrino-induced particle shower

Cherenkov Telescope Array, 2009 – Present

- Convener, Schwarzschild-Couder Telescope (SCT) camera working group: leading development, integration, calibration, and testing of silicon photomultiplier based camera installed on telescope in 2018
- CTA-US executive committee member, elected by senior members of CTA-US
- Led integration and testing of camera in my UW–Madison lab from 2016 to 2018
- Developing readout electronics for SCT
- Responsible for CTA-US (prototype SCT telescope) database
- VERITAS Associate Member (primarily for coordination of prototype SCT construction and operations in concert with VERITAS)
- Performing simulations of CTA sensitivity for cosmic-ray electron and positron measurements

Fermi Gamma-ray Space Telescope (FGST), 2009 – Present

- Affiliate Member since moving to UW–Madison (postdoc member previously)
- Measured charge-separated electron and positron spectra up to 200 GeV (higher energy than PAMELA and prior to AMS-02)
- Searching for cosmic-ray anisotropy with the largest sample of proton-identified cosmic rays at 100 GeV and higher energy
- Active galactic nuclei: discovered a new GeV blazar
- Small solar system bodies

South Pole Acoustic Test Setup (SPATS). 2005 – 2009

- Conceived and designed experiment with collaborators to measure the acoustic properties of South Pole ice for detection of extremely high-energy neutrinos
- Designed, integrated, tested, installed data acquisition system
- Installed and commissioned hardware at South Pole Station
- Designed, wrote, maintained data acquisition software
- Data analysis: sound speed, attenuation, transient sources

Study of Acoustic Ultra-high Energy Neutrino Detection (SAUND). 2000 – 2009

- Installed and commissioned experiment on two trips to Andros Island, Bahamas
- Designed and installed data acquisition hardware and software
- Operated experiment for two years
- Completed analysis of data and published first experimental search for astrophysical particles with acoustic method

Collider Detector at Fermilab (CDF). 2000

- Built, tested, and installed cable assemblies for Tevatron Run II

Grain boundary measurement and analysis (materials science). 1997 – 1999

- Developed software for atom probe data analysis techniques as high school and college student
- Published two papers on these techniques and the software to implement them (one awarded Best Materials Paper published in *Microscopy and Microanalysis*)

Independent research on standing wave phenomena in metal plates. 1997 – 1998

- Completed independent research project for Westinghouse (now Intel) Science Talent Search as high school student. Semi-finalist.

Professional Membership

- American Physical Society
- American Astronomical Society
- American Association for the Advancement of Science
- American Association of Physics Teachers

Invited Talks

Astrophysical neutrinos in the multi-messenger context. Committee on Space Research 44th Scientific Assembly (COSPAR 2022). Invited conference speaker, Athens, Greece. July 21, 2022.

Astrophysics with high-energy neutrinos. Invited colloquium speaker, Stanford Physics Colloquium. Stanford, CA. April 19, 2022.

High-energy (astrophysical) neutrinos. Invited conference plenary speaker, Topics in Astroparticle and Underground Physics (TAUP) 2021. Valencia, Spain (online). September 3, 2021.

Neutrino interactions in Antarctic ice. Invited seminar speaker, Adventures in Sensing. MIT (online), March 16, 2021.

Searches for high-energy neutrinos from transient sources. Invited conference speaker, Cosmic Rays and Neutrinos in the Multi-Messenger Era, Paris (online). December 10, 2020.

Astrophysics with multiple messengers: neutrinos, gravitational waves, and gamma rays. Invited colloquium speaker, Physics and Astronomy Colloquium. Purdue University, September 26, 2019.

Observational constraints on neutrino emission by blazars. Invited workshop speaker, “Understanding the multi-wavelength blazar variability”. Kavli Institute for Particle Astrophysics and Cosmology, Stanford University. August 28, 2019.

The multi-messenger astrophysics revolution enabled by neutrinos, gravitational waves, and gamma rays. Invited colloquium speaker, Kavli Institute for Cosmological Physics Colloquium. University of Chicago, May 22, 2019.

Multi-messenger astrophysics with neutrinos and gamma rays. Invited colloquium speaker, Physics Colloquium. University at Buffalo. Buffalo, NY. March 28, 2019.

Multi-messenger astrophysics with neutrinos and gamma rays. Invited colloquium speaker, Physics & Astronomy Colloquium. University of Rochester. Rochester, NY. March 27, 2019.

Neutrinos from a massive black hole across the universe. Invited public talk, Wednesday Night at the Lab. Madison, WI. August 29, 2018.

Evidence for a source of high-energy astrophysical neutrinos. Invited seminar speaker,

Medium and High Energy Seminar. University of Illinois. Urbana-Champaign, IL. August 27, 2018.

The Schwarzschild-Couder Telescope: an innovative technology for science with the Cherenkov Telescope Array. Invited conference speaker, COSPAR 42nd Assembly. Pasadena, CA. July 14-22, 2018.

Highlights from the IceCube Neutrino Observatory. Invited conference talk, Cosmic Ray International Seminar (CRIS) conference. Portopalo di Capo Passero, Italy. June 21, 2018.

Smart phones as particle detectors: the Distributed Electronic Cosmic-ray Observatory. Invited conference talk, Cosmic Ray International Seminar (CRIS) conference. Portopalo di Capo Passero, Italy. June 21, 2018.

Recent highlights from the IceCube Neutrino Observatory. Invited conference speaker, Lake Louise Winter Institute. Lake Louise, Alberta, Canada. February 21, 2018.

Cosmic-ray anisotropy searches with the Fermi Large Area Telescope. Invited seminar speaker, Center for Relativistic Astrophysics Seminar, Georgia Tech. Atlanta, Georgia. February 1, 2018.

Astrophysical neutrinos and the search for their origins. Invited seminar speaker. INFN. Pisa, Italy. January 9, 2018.

The Universe from down at the bottom of the Earth. SoundWaves. Invited public talk. Wisconsin Institutes for Discovery. Madison, WI. December 1, 2017.

Neutrino astronomy at the South Pole. Invited public talk. Science on Tap, Milwaukee Public Museum. Milwaukee, WI. November 2, 2017.

Cosmic rays from gamma rays and neutrinos. Invited conference talk. Cosmic Ray Anisotropy 2017. Guadalajara, Mexico. October 11, 2017.

Fermi LAT studies of cosmic-ray anisotropy at the 100 GeV scale. Invited conference talk. Cosmic Ray Anisotropy 2017. Guadalajara, Mexico. October 11, 2017.

Recent highlights in neutrino astronomy. Invited conference talk. Second SVOM scientific workshop: Surveying the fast-changing multi-wavelength sky. Qiannan, China. April 24, 2017.

The physics of particle detectors. Invited lecture. Fermi Summer School. Lewes, Delaware. May 31, 2016.

The Cherenkov Telescope Array. Invited lecture. Fermi Summer School. Lewes, Delaware. June 1, 2016.

IceCube and connections between neutrino and gamma astronomy. Invited lecture. Fermi Summer School. Lewes, Delaware. June 2, 2016.

Astrophysical neutrinos and the search for their origins. Invited seminar speaker, Washington University Space Science and Astrophysics Seminar. St Louis, MO. March 25, 2016.

The physics of love. SoundWaves. Invited public talk. Wisconsin Institutes for Discovery. Madison, WI. February 12, 2016.

Cosmic rays: from the simple to the complex. Invited seminar speaker, University of Wisconsin Chaos and Complex Systems Seminar. Madison, WI. October 27, 2015.

Indirect detection of dark matter with the Cherenkov Telescope Array. Invited conference speaker, Conference on the Intersections of Particle and Nuclear Physics (CIPANP). Vail, CO. May 19, 2015.

Recent results from IceCube. Invited summer school speaker, SLAC Summer Institute. Menlo Park, CA. August 11, 2014.

A trillion times beyond visible: Astronomy with the Cherenkov Telescope Array. Invited colloquium speaker, UW Madison Astronomy Department. University of Wisconsin. Madison, WI. January 23, 2014.

Cosmic ray measurements with the Fermi Large Area Telescope. Invited conference speaker, Cosmic Ray Anisotropy Workshop. University of Wisconsin. Madison, WI. September 20, 2013.

Astrophysics and particle physics with cosmic-ray electrons and positrons. Invited seminar speaker, Georgia Tech Center for Relativistic Astrophysics Seminar. Atlanta, GA. April 25, 2013.

Measurement of cosmic-ray positrons with the Fermi Gamma-ray Space Telescope. Invited symposium speaker, Einstein Fellows Symposium. Harvard-Smithsonian Center for Astrophysics. Cambridge, MA. Oct 24, 2013.

Antiparticles in the shadow of the Earth: Cosmic-ray positrons with the Fermi Gamma-

ray Space Telescope. Invited colloquium speaker, University of San Francisco Physics and Astrophysics Colloquium. San Francisco, CA. March 29, 2012.

Measurement of cosmic-ray positrons with the Fermi LAT. Invited conference speaker, Snowbird Workshop on Dark Matter Observations through Gamma Rays (SnowDOG 2012). Snowbird, UT. March 26, 2012.

Highlights from the Fermi Gamma-ray Space Telescope of interest to IceCube. Invited speaker, IceCube Collaboration Meeting, UC Berkeley. Berkeley, CA. March 20, 2012.

Antiparticles in the shadow of the Earth: Cosmic-ray positrons with the Fermi Gamma-ray Space Telescope. Invited seminar speaker, University of Wisconsin Nuclear/Particle/Astro/Cosmo Forum. Madison, WI. March 5, 2012.

Black holes and exploding stars. Invited planetarium speaker, Rauch Planetarium. Louisville, KY. March 2, 2012.

Measurement of the cosmic-ray positron spectrum with the Earth's magnetic field and the Fermi gamma-ray space telescope. Invited seminar speaker, Institute for Nuclear and Particle Astrophysics. Lawrence Berkeley National Laboratory, Berkeley, CA. February 10, 2012.

Measurement of the cosmic-ray positron spectrum with the Earth's magnetic field and the Fermi gamma-ray space telescope. Invited seminar speaker, UCLA High Energy and Astro-Particle Seminar. Los Angeles, CA. December 14, 2011.

A billion times beyond visible: Astronomy with the Fermi Gamma-ray Space Telescope. Invited speaker, Tri-Valley Stargazers (amateur astronomy club). Livermore, CA. October 21, 2011.

Cosmic-ray electron and positron measurements with the Fermi LAT. Invited colloquium speaker, Space Sciences Laboratory Colloquium. UC Berkeley. Berkeley, CA. June 10, 2011.

Physics and Astrophysics with Gamma-ray Telescopes. Invited seminar speaker at the Institute for Nuclear and Particle Astrophysics (INPA). Lawrence Berkeley National Laboratory. Berkeley, CA. July 30, 2010.

Physics and Astrophysics with Gamma-ray Telescopes. Invited conference speaker, Neutrino 2010, Athens, Greece, June 14-19, 2010.

IceCube: A billion-ton telescope at the South Pole. Invited colloquium speaker,

Stanford University Astrophysics Colloquium. Stanford, CA. April 1, 2010.

The Advanced Gamma-ray Imaging System (AGIS): A next-generation TeV telescope array. Invited seminar speaker, Kavli Institute for Particle Astrophysics and Cosmology tea talk, Stanford, CA. February 23, 2010.

Pop goes the neutrino: Acoustic Detection of Astrophysical Neutrinos. Invited seminar speaker at The Ohio State University Center for Cosmology and AstroParticle Physics. Columbus, OH. December 14, 2010.

Pop goes the Neutrino: Acoustic Detection of Astrophysical Neutrinos. Invited seminar speaker, UCLA High Energy and Astro-Particle Seminar. Los Angeles, CA. March 17, 2009.

IceCube: A billion-ton telescope at the South Pole. Invited colloquium speaker at the University of Louisville, Department of Physics and Astronomy. Louisville, KY. March 2009.

IceCube: A billion-ton telescope at the South Pole. Invited speaker at Tri-Valley Stargazers (amateur astronomy club). Livermore, CA. January 2009.

The South Pole Acoustic Test Setup: Overview. Invited speaker at the 3rd International Workshop on Acoustic and Radio EeV Neutrino detection Activities (ARENA). Rome, Italy. 2008.

Pop Goes the Neutrino. Invited seminar speaker in the Advanced Instrumentation Seminar series. SLAC National Accelerator Laboratory. Menlo Park, CA. 2008.

Pop Goes the Neutrino. Invited seminar speaker at the Institute for Nuclear and Particle Astrophysics (INPA). Lawrence Berkeley National Laboratory. Berkeley, CA. 2007.

Summary: Acoustic Detection of EHE Neutrinos. Invited rapporteur speaker at the TeV Particle Astrophysics International Workshop (TeVPA II). Madison, WI. 2006.

Acoustic Detection of Astrophysical Neutrinos. Invited seminar speaker at the Humboldt University Physics Department. Berlin, Germany. 2005.

Acoustic Detection of High Energy Neutrinos. Invited seminar speaker in the Physics Department. Universita di Roma 1 "La Sapienza." Rome, Italy. 2003.

Neutrino Fishing in the Bahamas. Invited seminar speaker in the High Energy Physics group. University of Chicago. Chicago, IL. 2003.

Contributed Talks

Gamma-ray astrophysics with the Cherenkov Telescope Array. American Physics Society April Meeting. New York, NY (online presentation). April 11, 2022.

Performance of the prototype Schwarzschild-Couder Telescope for TeV gamma-ray astronomy. American Astronomical Society Summer (236th) meeting. Virtual. June 20, 2020.

Searching for astrophysical neutrinos from gravitational wave sources in real time with IceCube. Speaker at APS April meeting. Virtual. April 20, 2020.

IceCube as a multi-messenger follow-up observatory for astrophysical transients. Speaker at the International Cosmic Ray Conference (ICRC). Madison, WI. July 30, 2019.

An all-sky search for cosmic-ray proton anisotropy with the Fermi Large Area Telescope. Speaker at the International Cosmic Ray Conference (ICRC). Madison, WI. July 26, 2019.

A search for cosmic-ray proton anisotropy with the Fermi Large Area Telescope. Speaker at the TeV Particle Astrophysics (TEVPA) Conference. Columbus, OH. August 10, 2017.

Searching for neutrinos from fast radio bursts with IceCube. Speaker at Fast Radio Bursts: New Probes of Fundamental Physics and Cosmology. Aspen Center for Physics. February 17, 2017.

Multi-messenger particle astrophysics with the Cherenkov Telescope Array. Speaker at the APS April Meeting. Washington, DC. January 28, 2017.

The gamma-ray flux from millisecond pulsars in dwarf spheroidal galaxies. Speaker at the TeV Particle Astrophysics (TEVPA) Conference. CERN. September 12, 2016.

Fundamental physics with the Cherenkov Telescope Array. Speaker at the International Conference on High Energy Physics (IHEP). Chicago, IL. August 4, 2016.

Prospects for measuring the TeV positron flux with the Cherenkov Telescope Array. Speaker at the International Cosmic Ray Conference. Den Haag, Netherlands. July 30, 2015.

The Cherenkov Telescope Array: A new observatory for the highest energy

astrophysics.

Speaker at American Astronomical Society High Energy Astrophysics Division meeting. Chicago, IL. August 20, 2014.

Silicon photomultiplier camera for Schwarzschild-Couder Cherenkov telescopes

Speaker at Technology in Particle Physics (TIPP) 2014. Amsterdam, Netherlands. June 4, 2014.

Waveform digitization with the TARGET chip

Speaker at Imaging the Extreme Universe: Solid-state cameras for Astroparticle Physics. Kavli Institute for Cosmological Physics, University of Chicago. Chicago, IL. May 10, 2013.

Measurement of the cosmic-ray positron spectrum with the Fermi LAT using the Earth's magnetic field.

Speaker at the APS California-Nevada meeting. SLAC National Accelerator Laboratory. Menlo Park, CA. November 11, 2011.

Measurement of the cosmic-ray positron spectrum with the Fermi LAT using the Earth's magnetic field.

Speaker at the International Cosmic Ray Conference (ICRC). Beijing, China. August 2011.

Measurement of acoustic properties of South Pole ice

Speaker at the Scientific Committee on Antarctic Research (SCAR) Open Science Conference. Buenos Aires, Argentina. August 5, 2010.

Pop goes the neutrino: Acoustic detection of astrophysical neutrinos

Speaker at the American Physical Society California meeting. Lawrence Berkeley National Lab, Berkeley, CA. October 26, 2007.

First Results from the South Pole Acoustic Test Setup

Speaker at the 30th International Cosmic Ray Conference (ICRC). Merida, Mexico. 2007.

Toward Hybrid Optical/Radio/Acoustic Detection of Neutrinos

Speaker at the TeV Particle Astrophysics International Workshop (TeVPA II). Madison, WI. 2006.

Acoustic Measurements for EeV Neutrino Detection at the South Pole

Poster at Neutrino 2006. Santa Fe, NM. 2006.

Signal Processing and Background Reduction: Experience from SAUND

Speaker at the International Acoustic and Radio EeV Neutrino detection Activities Workshop (ARENA). DESY Zeuthen, Germany. 2005.

Results from the SAUND I experiment

Speaker at the International Acoustic and Radio EeV Neutrino detection Activities Workshop (ARENA). DESY Zeuthen, Germany. 2005.

Capabilities of an Optical-Radio-Acoustic Detector Array at the South Pole

Speaker at the International Acoustic and Radio EeV Neutrino detection Activities Workshop (ARENA). DESY Zeuthen, Germany. 2005.

Acoustic Neutrino Detection in Salt

Speaker at Salt Shower Array (SaSA) Workshop. SLAC National Accelerator Lab. Menlo Park, CA. 2005.

High energy neutrino acoustic detection in the ocean

Speaker at the 8th International Conference on Advanced Technology and Particle Physics (ICATPP): Astroparticle, Particle, Space Physics, Detectors and Medical Physics Applications. Como, Italy. 2003.

Results from a Study of Acoustic Ultra-high energy Neutrino Detection (SAUND)

Speaker at First Workshop on Acoustic Cosmic Ray and Neutrino Detection. Stanford University. Stanford, CA. 2003.

Acoustic Detection of Ultra-high energy Neutrinos

Speaker at the Oceans 2003 conference. Scripps Institution of Oceanography. University of California. San Diego, CA. 2003.

Book Chapter

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