

Department of Physics,  
Sungkyunkwan University,  
Suwon 16419, Korea

*Tel:* +82-31-290-5902

*E-mail:*rott@skku.edu



RESEARCH FOCUS	Experimental astro-particle physics, particle physics, geophysics, neutrinos physics
LANGUAGES	German, English; Elementary: French, Japanese, and Korean
EMPLOYMENT	
	2017 – 2018 Honorary Fellow at Wisconsin IceCube Particle Astrophysics Center (WIPAC) (Sabbatical), University of Wisconsin Madison, USA
	2017 – now Associate Professor, Sungkyunkwan University, Korea
	2013 – 2017 Assistant Professor, Sungkyunkwan University, Korea
	2016 Visiting Researcher (3-month), University of Tokyo, Japan
	2009 – 2013 Senior Fellow of the Center for Cosmology and AstroParticle Physics (CCAPP) (5-year term), The Ohio State University, USA
	2008 – 2009 CCAPP Fellow (3-year term), The Ohio State University, USA
	2005 – 2008 Postdoctoral Fellow, Pennsylvania State University, USA
EDUCATION	
	1998 – 2004 Purdue University, Indiana, USA Ph.D in Experimental Particle Physics (December 2004) Title : “Search for Scalar Bottom Quarks from Gluino Decays” at CDF Thesis Adviser : Prof. Daniela Bortoletto
	1995 – 1998 Universität Hannover, Hannover, Germany
HONORS AND AWARDS	
	2011 Recipient of NSF Antarctica Service Medal
	2005 “Fermilab’s Result of the Week” (FermiNews, August 11, 2005)
	2004 George W. Tautfest Award, Purdue University
	1998 – 1999 University of Hannover – Purdue University direct exchange fellowship
FUNDS AND GRANTS	
	2017 – present NRF Midscale Research Fund (PI), Korea – NRF-2017R1A2B2003666
	2017 – present Foreign Facility Fund (PI of 7 sub-PIs) – NRF-2017K1A3A7A09015973
	2016 – present NRF SRC Korea Neutrino Research Center (KNRC) (Co-I), Korea
	2016 – 2017 NRF Individual Researcher (PI), Korea – NRF-2016R1D1A1B03931688
	2013 – present BrainKorea (BK21plus) participant, Korea
	2013 – 2016 NRF Individual Researcher (PI), Korea – NRF-2013R1A1A1007068
	2013 – 2014 SKKU Intramural Faculty Fund Award, Korea
	2013 – 2014 Fermi GI Cycle 6 (Co-I with Prof. A. Peter (OSU)), USA
	2011 – 2012 NSF Award #1135622, USA
PROFESSIONAL ACTIVITIES	
	2015 – present IceCube Speaker Selection Committee Member
	2013 – present IceCube Beyond Standard Model Working Group Co-Convenor
	2012 – 2013 IceCube Dark Matter Working Group Co-Convenor
	2011 – present IceCube Collaboration Institutional Board Member
	2011 – present Manuscript referee for PRL, PLB, JCAP
	2008 – 2009 Elected as IceCube Early Career Scientist Representative

## Conference Organization

24. Pioneer Symposium at the Korean Physical Society (KPS) Meeting on JSNS<sup>2</sup> and sterile neutrinos October 26-27, 2017, Gyeongju, Korea (Organizer)
23. 35th International Cosmic Ray Conference July 12-20, 2017, Busan, Korea (NOC - National Organizing Committee Member)
22. Dark Side of the Universe (DSU) July 10-14, 2017, Daejeon, Korea (LOC - Local Organizing Committee)
21. The 26th International Workshop on Weak Interactions and Neutrinos (WIN2017) June 19-24, 2017, Irvine, CA, USA (Working group leader / Session Chair)
20. IceCube Particle Astrophysics Symposium (IPA2017) May 8-10, 2017, Madison, WI, USA (Session Chair)
19. Korean Physics Society (KPS) Pioneer Symposium on T2HKK, October 20, 2016, Gwangju, Korea (Co-organizer)
18. Beyond the Standard Model with Neutrino Detectors , July 28-29, 2016, Suwon, Korea (Organizer)
17. 1st Neutrino Oscillation Tomography Workshop , January 8-9, 2016, Tokyo, Japan (Co-organizer)
16. CosPA – 12th Symposium on Cosmology and Particle Astrophysics , October 12-16, 2015, Daejeon, Korea (Co-organizer)
15. MIAPP Workshop DarkMALT, February 1-28, 2015, Munich, Germany (Co-organizer)
14. SKKU Physics Department 60th Anniversary Symposium, November 5-7, 2014, Suwon, Korea (Co-organizer)
13. Korean Physics Society (KPS) Pioneering Symposium, October 22-24, 2014, Kwangju, Korea (Organizer) (with KPS Support)
12. TeVPA / IDM 2014 June 24-30, 2014, Amsterdam, Netherlands (Session Convenor)
11. CCAPP Workshop Cosmic Messages in Ghostly Bottles: Astrophysical Neutrino Sources and Identification, February 28-29, 2014, Ohio State, Columbus, USA (Co-organizer)
10. SKKU International Symposium on Particle Astrophysics, October 3-5, 2013, Suwon, Korea (Co-organizer)
9. TeVPA 2013 August 24-29 , 2013, Irvine, CA, USA (Session Convenor)
8. IceCube Particle Astrophysics IPA2013 May 13-15 , 2013, Madison, WI, USA (Session Convenor)
7. Neutrino Oscillation Workshop, February 11-13, 2013, University of Pittsburgh, Pittsburgh, PA, USA (Co-organizer)
6. Revealing Deaths of Massive Stars with GeV-TeV Neutrinos Workshop, August 2-3, 2012, Ohio State, Columbus, OH, USA (Co-organizer)
5. CCAPP Symposium 2011, "Unraveling the Nature of the Universe with Current and Future Datasets," April 4-6, 2011, Ohio State, Columbus, OH, USA (Chair) (NSF Award #1135622 )
4. 2nd Workshop on Novel Searches for Dark Matter with Neutrino Telescopes, July 5-6, 2010, Ohio State, Columbus, OH, USA (Chair)
3. CCAPP Symposium, Towards Fundamental Breakthroughs in Astrophysics and Cosmology within the Next Decade, October 12 - 14, 2009, Ohio State, Columbus, OH, USA (Co-organizer)
2. Novel Searches for Dark Matter with Neutrino Telescopes, November 17-19, 2008, Ohio State, Columbus, OH, USA (Co-organizer)
1. 9th International Workshop On VERTEX Detectors (VERTEX 2000), September 10-15, 2000, Sleeping Bear Dunes National Lakeshore, MI, USA (scientific secretary)

**Invited Conference Talks**

55. *Indirect Dark Matter Searches with Neutrinos* (**Review Talk**)  
UCLA Dark Matter (DM 2018),  
February 21-23, 2018, Los Angeles, USA
54. *Indirect Dark Matter Searches* (**Review Talk**)  
Topics in Astroparticle and Underground Physics (TAUP 2017),  
July 22-24, 2017, Sudbury, Canada
53. *Status of Dark Matter Searches* (**Rapporteur Talk**)  
35th International Cosmic Ray Conference (ICRC 2017) July 12-20, 2017, Busan, Korea
52. *Summary of Astroparticle Physics* (**Working group Summary Talk**)  
The 26th International Workshop on Weak Interactions and Neutrinos (WIN 2017)  
June 20-24, 2017, Irvine, USA
51. *Multimessenger Neutrino Astronomy*  
Korean Physical Society (KPS) Spring Meeting, Focus Session on Astroparticle Physics,  
April 19-21, 2017, Daejeon, Korea
50. *IceCube*  
30 years from SN1987A and the future February 12-13, 2017, Tokyo, Japan
49. *Searches for Heavy Dark Matter*  
Focus Workshop on Particle Physics and Cosmology , December 5-9, 2016, Daejeon, Korea
48. *Prospects for Neutrino Oscillation Tomography*  
International Workshop Neutrino Research and Thermal Evolution of the Earth  
October 25-27, 2016, Tohoku University, Sendai, Japan
47. *Dark Matter IceCube/Antares joined analysis*  
MANTS Meeting October 1-2, 2016, Mainz, Germany
46. *Dark Matter Searches with IceCube*  
IDM2016 Identification of Dark Matter 2016, July 18-22, 2016, Sheffield, UK
45. *Indirect Dark Matter Searches and Prospects for Hyper-K*  
7th Open Meeting for the Hyper-Kamiokande Project , July 10-11, 2016, Queen Mary University London, UK
44. *Latest Results from IceCube*  
12th Patras Workshop on Axions, WIMPs and WISPs , June 20-24, 2016, Jeju, Korea
43. *First Observation of Time Variation in the Solar-Disk Gamma-Ray Flux with Fermi*  
Mini Workshop on solar gamma-ray emission, March 25, 2016, Nagoya, Japan
42. *Astrophysical Neutrinos and Dark Matter*  
KIAS-CFHEP Workshop, November 9-13, 2015, Seoul, Korea
41. *Status of Neutrino Astronomy* (**Review Talk**)  
CosPA – 12th Symposium on Cosmology and Particle Astrophysics, October 12-16, 2015, Daejeon, Korea
40. *IceCube*  
Particle Physics and Cosmology (PPC2015), June 29 - July 3, 2015, Deadwood, SD, USA
39. *Search for Dark Matter with MeV Neutrinos*  
CETUP2015, June 22 - 26, 2015, Deadwood, SD, USA

38. *Neutrino Oscillation Tomography*  
Neutrino Geoscience 2015, June 15 - 17, 2015, Paris, France
37. *New Directions in Solar Dark Matter Searches*  
7th KIAS Workshop – Exploring the Dark Sector , March 16 - 20, 2015, Seoul, Korea
36. *Dark Matter Search with Neutrinos*  
IBS-Multidark Workshop, October 10 - 16, 2014, Daejeon, Korea
35. *PINGU and IceCube Dark Matter Results*  
Recontres du Vietnam, August 3 - 9, 2014, Quy Nhon, Vietnam
34. *PINGU and Neutrino Tomography*  
JPGU Meeting, April 28 - May 2, 2014, Yokohama, Japan
33. *Dark Matter Searches with Neutrinos (Review Talk)*  
APS April Meeting 2014, April 5 - 8, Savannah, GA, USA
32. *Evidence for High-energy neutrinos with IceCube*  
9th International Symposium on Particles, Strings, and Cosmology, November 20 - 26, 2013, Taipei, Taiwan
31. *Indirect Dark Matter Searches*  
Center for Underground Nuclear and AstroParticle Physics Workshop, August 22 - 23, 2013, Daejeon, Korea
30. *Review of IceCube and PINGU*  
Muon and Neutrino Radiography 2013 , July 25 - 26, 2013, Tokyo, Japan
29. *Neutrino Oscillation Measurements with PINGU*  
RENO-50 Workshop , June 13 - 14, 2013, Seoul, Korea
28. *Laboratory Astrophysics: Particles (Review Talk)*  
AAAS Meeting, June 2 - 6, Indianapolis, USA
27. *Recent Results from IceCube*  
KITP Dark Matter Workshop, May 27 - June 1, 2013, Santa Barbara, USA
26. *Status of Dark Matter Searches with Neutrino Telescopes (Review Talk)*, April 3 - 5 , 2013, Marseilles, France
25. *New directions in Solar WIMP Searches* Aspen Winter Conference – New Directions in Neutrino Physics, February 3 - 9 , 2013, Aspen CO, USA
24. *Latest Results from IceCube* Aspen Winter Conference – Closing in on Dark Matter, January 30 - February 3 , 2013, Aspen CO, USA
23. *Latest IceCube Results* Particle Physics and Cosmology (PPC) 2012, December 5-9, 2012, Seoul, Korea
22. *Role of Indirect Searches for Identifying Dark Matter (Panelist)* Sackler Colloquia on Dark Matter, October 19-21, 2012, Irvine, CA, USA
21. *Search for Dark Matter: LHC and indirect (Review Talk)* Astroteilchenphysik in Deutschland: Status und Perspektiven, September 20-21, 2012, Zeuthen, Germany
20. *Neutrino Searches for Dark Matter*  
SKKU Symposium on Astrophysics and Cosmology: “From Particle to Universe,” August 30 - September 1, 2012, Seoul, Korea
19. *Latest Results of IceCube Dark Matter Searches*  
Identification of Dark Matter (IDM2012), July 23-27, 2012, Chicago, IL, USA

18. *Prospects and Methods for Solar WIMP Searches*  
Dark Matter, Unification & Neutrino Physics (CETUP2012), July 11-21, 2012, Lead, SD, USA
17. *Review of Indirect WIMP Search Experiments (Review Talk)*  
Neutrino 2012, June 3-9, 2012, Kyoto, Japan
16. *Indirect Searches for Dark Matter with Neutrinos and Gamma-rays*  
Workshop on LHC and Dark Matter Physics, March 9-11, 2012, Taipei, Taiwan
15. *Indirect Search for Dark Matter*  
GCOE Particle Cosmology Workshop & School, December 16-21, 2011, Nagoya, Japan
14. *IceCube: Status, Result, and Plans*  
Double Beta Decay and Neutrinos, November 14-17, 2011, Osaka, Japan
13. *Dark Matter Halo Analyses*  
Mediterranean-Antarctic Neutrino Telescope Symposium, September 24-25, 2011, Uppsala University, Uppsala, Sweden
12. *Hunt for Dark Matter with Neutrinos*  
Dark Matter: Its Origin, Models, and Detection, May 27-29, 2011, University of New Mexico, Albuquerque, NM, USA
11. *Novel Searches for Dark Matter 2010*  
Novel Searches for Dark Matter, July 5-6, 2010, CCAPP workshop, Ohio State, Columbus, OH, USA
10. *DeepCore and Galactic Center Dark Matter*  
Second Workshop on Low Energy Neutrino Physics and Astrophysics with IceCube, Pennsylvania State University, July 1-2, 2010, State College, PA, USA
9. *Neutrino Telescopes and the Hunt for Dark Matter*  
10th Great Lakes Cosmology Workshop (GLCW X), June 14-16, 2010, Chicago, IL, USA
8. *Indirect Searches for Dark Matter (Review Talk)*  
Lecture, GCOE Nagoya Winter School February 18-21, 2010, Nagoya, Japan
7. *Dark Matter Searches with Neutrino Telescopes*  
IPMU Focus Week on Indirect Dark Matter Searches, December 7-11, 2009, Kashiwa, Japan
6. *Neutrinos from Dark Matter Annihilation*  
Workshop on the Next Generation Nucleon Decay and Neutrino Detectors (NNN09), October 8-10, 2009, Estes Park, CO, USA
5. *Dark Matter Searches with DeepCore*  
Workshop on Low Energy Neutrino Physics and Astrophysics with IceCube, Pennsylvania State University, March 19, 2009, State College, PA, USA
4. *Latest Results from IceCube*  
XLIVth Rencontres de Moriond EW 2009, March 12, 2009, LaThuile, Italy
3. *How to perform Galactic halo searches*  
Novel Searches for Dark Matter, November 18-20, 2008, CCAPP workshop, Ohio State, Columbus, OH, USA
2. *IceCube Status, Performance and Future*  
XIV International Symposium on Very High Energy Cosmic Ray Interactions (ISVHECRI 2006), August 15-22, 2006, Weihai, China
1. *Search for Top and Bottom Squarks*  
EPS 2003, July 17-23, Aachen, Germany

## Colloquia and Seminars

81. *The hunt for dark matter with neutrinos*  
Physics Colloquium, UW Madison, Feb 9, 2017, Madison, WI, USA
80. *Energetic Neutrinos from the Sun; Dark Matter or Solar Atmospheric Neutrinos ?*  
LPTHE Seminar, Dec 22, 2017, Paris, France
79. *Search for Solar Atmospheric Neutrinos with IceCube*  
Neutrino Physics Seminar, Virginia Tech, Dec 6, 2017, Blacksburg, VA, USA
78. *Search for Solar Atmospheric Neutrinos*  
HEP Seminar, Penn State University, Sep 20, 2017, University Park, PA, USA
77. *Search for Solar Atmospheric Neutrinos and Dark Matter Captured in the Sun*  
UHM High Energy Physics Seminar, University of Hawaii, Apr 4, 2017, Honolulu, HI, USA
76. *Dark Matter Searches with Neutrinos*  
Seminar, Konkuk University, Mar 10, 2017, Seoul, Korea
75. *Searches for Dark Matter with IceCube*  
KIT Seminar, Karlsruhe Institute of Technology, Jan 30, 2017, Karlsruhe, Germany
74. *Searches for Dark Matter with IceCube*  
IFIC Seminar, University of Valencia, Jan 26, 2017, Valencia, Spain
73. *Searches for Dark Matter with Neutrinos*  
MPP Colloquium, Max Planck Institute fuer Physik, Jan 24, 2017, Munich, Germany
72. *Prospects for Dark Matter Searches with Next-generation Neutrino Telescopes*  
EPP SLAC Theory Seminar, Dec 16, 2016, Stanford, CA USA
71. *Dark Matter Searches at Neutrino Telescopes*  
SCIPP Seminar UC Santa Cruz, Dec 13, 2016, Santa Cruz, CA, USA
70. *Prospects for Beyond the Standard Model Physics Discoveries at Next-generation Neutrino Detectors*  
Seminar, UC Irvine, Dec 12, 2016, Irvine, CA, USA
69. *The Birth of Neutrino Astronomy*  
Astronomy Colloquium, Seoul National University, Nov 10, 2016, Seoul, Korea
68. *Dark Matter Searches with Neutrinos*  
Seminar CTPU, Sep 7, 2016, Daejeon, Korea
67. *The Hunt for Dark Matter with Neutrinos*  
Seminar NYU Abu Dhabi, Aug 31, 2016, Abu Dhabi, UAE
66. *Dark Matter Searches with Neutrinos*  
Particle Phenomenology Forum University of Oxford, Jul 14, 2016, Oxford, UK
65. *Status of Neutrino Astronomy*  
Special Lecture, Yonsei University, May 24, 2016, Seoul, Korea
64. *Neutrino Oscillation Tomography*  
Seminar, Earthquake Research Institute (ERI), University of Tokyo, Jan 2016, Tokyo, Japan
63. *Dark Matter Searches with Neutrinos*  
Seminar, Kamioka, Jan 2016, Kamioka, Japan

62. *Neutrino Oscillations*  
Colloquium, KASI - Korea Astronomy and Space Science Institute, November 18, 2015, Daejeong, Korea
61. *Astroparticle Physics with IceCube*  
Seminar, Inha University, October 20, 2015, Incheon, Korea
60. *The IceCube Neutrino Telescope*  
KAIST Colloquium, October 5, 2015, Daejeong, Korea
59. *Dark Matter Searches with Neutrinos*  
Seminar, TRIUMF - University of British Columbia, July 13, 2015, Vancouver, Canada
58. *Superheavy Dark Matter*  
CCAPP Lunch Seminar, Ohio State University, July 10, 2015, Columbus, OH, USA
57. *Latest Results from IceCube*  
Colloquium, Yonsei University, May 6, 2015, Seoul, Korea
56. *Latest Results from IceCube*  
Colloquium, Korea University, March 10, 2015, Seoul, Korea
55. *Dark Matter Searches with IceCube*  
Seminar, Sogang University, November 17, 2014, Seoul, Korea
54. *PeV Neutrinos in IceCube*  
Colloquium, Sejong University, November 11, 2014, Seoul, Korea
53. *Lastest Results from IceCube*  
KIAS Seminar, KIAS, June 11, 2014, Seoul, Korea
52. *Discovery of high-energy neutrinos*  
KASI Seminar, KASI, June 10, 2014, Daejeong, Korea
51. *IceCube and PINGU*  
Colloquium, Chonam Univeristy, June 5, 2014, Gwangju, Korea
50. *Lastest Results from IceCube*  
Physics Colloquium, Sungkyunkwan University, June 12, 2013, Suwon, Korea
49. *Dark Matter Searches with Neutrinos*  
LBNL Seminar, May 24, 2013, Berkeley, CA, USA
48. *Lastest Results from IceCube*  
Physics Colloquium, Stanford/SLAC Colloquium, May 23, 2013, Palo Alto, CA, USA
47. *Dark Matter Searches with Neutrinos*  
Seminar, University of Delaware, March 8, 2013, Newark, DE, USA
46. *Lastest Results from IceCube*  
Astronomy Colloquium, University of Virginia, March 7, 2013, Charlottesville, VA, USA
45. *Low-energy neutrino as Solar WIMP signal*  
Oscar Klein Center Seminar, University of Stockholm, December 14, 2012, Stockholm, Sweden
44. *Solar WIMP Searches*  
GRAPPA Seminar, GRAPPA, December 10, 2012, Amsterdam, Netherlands
43. *Novel Searches for Dark Matter in the Sun*  
Physics Seminar, Uppsala Universitet, December 6, 2012, Uppsala, Sweden

42. *Latest Results from the IceCube Neutrino Observatory (video)*  
Physics Colloquium, University of Utah, October 25, 2012, UT, USA
41. *Hunting for Dark Matter at the South Pole*  
Special Colloquium, DESY Zeuthen, October 17, 2012, Berlin, Germany
40. *Latest Results and Prospect for Observing Dark Matter Annihilation Signals from the Sun*  
Seminar, University of Torino, October 8, 2012, Torino, Italy
39. *IceCube and Beyond*  
High-Energy Physics Seminar, Kyungpook National University, Sep 5, 2012, Taegu, Korea
38. *Neutrino Hunt for Dark Matter in the Sun*  
CCAPP Seminar, Ohio State University, June 26, 2012, Columbus, OH, USA
37. *Indirect Search for Dark Matter with Neutrinos*  
Tenure-Track Selection Workshop, Albert Einstein Center, University of Bern, May 10 – 11, 2012, Bern, Switzerland
36. *Unraveling the nature of dark matter with neutrinos*  
Seminar, University of Geneva, May 9, 2012, Geneva, Switzerland
35. *Hunting for Dark Matter in Antarctica*  
Special Colloquium – NPAC Forum, February 15, 2012, Madison, WI, USA
34. *Unraveling the nature of dark matter with neutrinos*  
Gravitation and High Energy Physics Seminar Series, National Central University, November 23, 2011, Taipei, Taiwan
33. *Dark Matter Searches with Neutrinos*  
High-Energy Theory & Cosmology Seminar, Vanderbilt University, October 21, 2011, Nashville, TN, USA
32. *Dark Matter Searches with Neutrino Telescopes*  
Seminar, Texas A&M October 12, 2011, College Station, TX, USA
31. *The Fully Operational Icecube Neutrino Telescope*  
Physics Colloquium, Colorado State University, October 10, 2011, Fort Collins, CO, USA
30. *Science with the largest neutrino detector IceCube*  
ACD/HAO Seminar, National Center for Atmospheric Research, October 7, 2011, Boulder, CO, USA
29. *Closing in on Dark Matter with Neutrino Telescopes*  
KEK Theory Seminar, August 29, 2011, Tsukuba, Japan
28. *Closing in on Dark Matter*  
Special Seminar, Institute for the Physics and Mathematics of the Universe / Kamioka Observatory, February 15, 2011, Kamioka, Japan
27. *Dark Matter Searches with Neutrinos*  
Astro Seminar, University of Cincinnati, February 7, 2011, Cincinnati, OH, USA
26. *Arrival of a new Giant*  
Colloquium, Purdue University, January 13, 2011, W. Lafayette, IN, USA
25. *Hunting for Dark Matter with Neutrinos*  
Seminar, UC Santa Cruz, January 11, 2011, Santa Cruz, CA, USA



24. *Dark Matter Searches with Neutrinos*  
Cosmology Seminar, KIPAC/Stanford University, January 10, 2011, Stanford, CA, USA
23. *IceCube and Beyond*  
Seminar, Waseda University, December 17, 2010, Tokyo, Japan
22. *Ice Fishing for Neutrinos from Dark Matter*  
LA Astro Seminar, November 24, 2010, Los Alamos, NM, USA
21. *Constraining the Dark Matter self-annihilation cross section with IceCube*  
CMU/Pitt Astro Seminar, University of Pittsburgh, October 8, 2010, Pittsburgh, PA, USA
20. *Hunting for Dark Matter with Neutrinos*  
Colloquium, University of Hawai'i, August 26, 2010, Honolulu, HI, USA
19. *IceCube Dark Matter Searches*  
TAPIR Seminar, Caltech, April 2, 2010, Pasadena, CA, USA
18. *Halo Dark Matter Searches with IceCube/DeepCore*  
Seminar, University of New Mexico, May 5, 2009, Albuquerque, NM, USA
17. *Dark Matter Searches with IceCube*  
Seminar, Nagoya University, January 16, 2009, Nagoya, Japan
16. *Neutrino Oscillation Measurements at the South Pole*  
ICRR Seminar, University of Tokyo, January 9, 2009, Kashiwa, Japan
15. *Sub-TeV Neutrino Physics at the South Pole*  
Seminar, University of Stockholm, December 17, 2008, Stockholm, Sweden
14. *Hunting for Dark Matter with IceCube*  
Theoretical Physics Seminar, University of Bonn, December 15, 2008, Bonn, Germany
13. *Neutrino Oscillation Measurements with IceCube*  
Seminar, Georgia Tech, December 4, 2008, Atlanta, GA, USA
12. *Indirect Searches for Dark Matter with IceCube*  
High Energy Physics Seminar, University of Rochester, November 4, 2008, Rochester, NY, USA
11. *IceCube*  
Colloquium, National Taiwan University, April 1, 2008, Taipei, Taiwan
10. *Searches for Neutrino Oscillations and Dark Matter with IceCube*  
Seminar, Center for Cosmology and Astro-Particle Physics, March 25, 2008, Columbus, OH, USA
9. *Searches for Neutrino Oscillations and Dark Matter with IceCube*  
Colloquium, University of Canterbury, February 22, 2008, Christchurch, New Zealand
8. *Search for Dark Matter and Neutrino Oscillations with IceCube*  
Seminar, Purdue University, December 4, 2007, West Lafayette, IN, USA
7. *Latest Results from the IceCube Experiment*  
Seminar, University of Tokyo (ICRR), September 10, 2007, Kashiwa, Japan
6. *IceCube*  
Seminar, Tsukuba University, September 7, 2007, Tsukuba, Japan
5. *Latest Results from AMANDA and IceCube*  
Tokyo Institute of Technology, September 14, 2006, Tokyo, Japan

4. *Search for Sbottom Quarks from Gluino Decays*  
Colloquium, August 28, 2005, Chiba University, Japan
3. *Search for the Scalar Bottom Quark from Gluino Decays at the CDF*  
Seminar, Pennsylvania State University, November 1, 2004, University Park,  
PA, USA
2. *Search for Sbottom Quarks from Gluino Decays at CDF*  
Seminar, University of Rochester, November 2004, Rochester, NY, USA
1. *Search for Sbottom Quarks from Gluino Decays at CDF*  
Seminar, Fermilab, November 2004, Batavia, IL, USA

## Conference Contributions

37. *Search for Solar Atmospheric Neutrinos with IceCube*  
TeV Particle Astrophysics TeVPA 2017, August 7-11, 2017, Columbus, USA
36. *Sterile Neutrino Search with JSNS2*  
Korean Physical Society (KPS) Spring Meeting, April 19-21, 2017, Daejeon, Korea
35. *Neutrino Oscillation Tomography (poster)*  
American Geophysical Union (AGU2016), December 12-16, 2016, San Francisco, USA
34. *A Camera System for IceCube-Gen2 (poster)* (Poster award)  
KPS Fall Meeting, October 19-21, 2016, Gwangju, Korea
33. *Latest Dark Matter results from IceCube and prospects for future searches*  
Korean Supercomputer Conference , Oct 7, 2016, Seoul, Korea
32. *Neutrino Oscillation Tomography (poster)*  
XXVII International Conference on Neutrino Physics and Astrophysics (Neutrino 2016) , July 4-9, 2016, London, UK
31. *Discovery of Astrophysical Neutrinos*  
KPS Spring Meeting, April 22-24, 2015, Daejeon, Korea
30. *Solar WIMP Searches*  
KIAS Workshop, October 27-31, 2014, Seoul, Korea
29. *Overview of Dark Matter Searches with IceCube*  
TeVPA / IDM, June 24-30, 2014, Amsterdam, Netherlands
28. *Dark Matter Sensitivity Studies*  
Open Meeting for the Hyper-Kamiokande Project, Kavli IPMU, August 21-23, 2013, Tokyo, Japan
27. *New Methods in Solar WIMP Searches*  
Symposium on Neutrinos and Dark Matter in Nuclear Physics, June 11-15, 2012, Nara, Japan
26. *New Approaches in Solar WIMP Searches*  
UCLA Dark Matter, February 22-24, 2012, Los Angeles, USA
25. *Neutrino physics and astrophysics with IceCube In-fills*  
Intensity Frontier: Neutrino Working Group Meeting, October 24, 2011, Batavia, IL, USA
24. *Search for Dark Matter in the Milky Way with IceCube*  
32nd International Cosmic Ray Conference, August 11-18, 2011, Beijing, China
23. *Next Generation Neutrino Detectors*  
CCAPP Symposium 2011 / Supernova Workshop, April 4-6, 2011, Columbus, OH, USA
22. *Proton Decay Sensitivity Studies*  
Beyond DeepCore Workshop, March 19-20, 2011, Amsterdam, Netherlands
21. *Sensitivity for Dark Matter in the Earth*  
University of Alberta – DeepCore Analysis Workshop, February 26-28, 2011, Banff, Canada
20. *Sensitivity studies for Solar WIMPs* (poster)  
Workshop on the Next Generation Nucleon Decay and Neutrino Detectors (NNN10), December 13-16, 2010, Toyama, Japan

19. *Results and Prospects of Dark Matter Searches with IceCube* (poster)  
Darkness Visible, August 2-6, 2010, Cambridge, UK
18. *New Approaches in the Search for Solar WIMPs*  
Identification of Dark Matter (IDM 2010), July 26-30, 2010, Montpellier, France
17. *Dark Matter Searches with IceCube*  
SNOWPAC & SNOWCLUSTER 2010, March 23, 2010 - April 2, 2010, Snowbird, UT, USA
16. *Searches for Dark Matter from the Galactic Halo with IceCube*  
CCAPP Symposium 2009: Towards Fundamental Breakthroughs in Astrophysics and Cosmology within the Next Decade, October 12-14, 2009, Columbus, OH, USA
15. *Results and Prospects of Indirect Searches for Dark Matter with IceCube*  
31st International Cosmic Ray Conference, July 7-15, 2009, Lodz, Poland
14. *Atmospheric Neutrino Oscillation Measurements with IceCube*  
31st International Cosmic Ray Conference, July 7-15, 2009, Lodz, Poland
13. *Fundamental Neutrino Measurements with IceCube DeepCore* (poster)  
31st International Cosmic Ray Conference, July 7-15, 2009, Lodz, Poland
12. *Indirect Searches for Dark Matter with IceCube* (gong show talk),  
BCCS08 Symposium, December 8-9, 2008, Cleveland, OH, USA
11. *Neutrino Oscillation Measurements with IceCube* (poster),  
International Conference on High Energy Physics (ICHEP 08), July 29 - August 5, 2008, Philadelphia, PA, USA
10. *Dark Matter Searches in IceCube* (poster),  
TAUP 2007, September 11-15, 2007, Sendai, Japan
9. *Potential of the IceCube array for reconstruction of low energy events*  
TeV Particle Astrophysics 2007, August 27-31, 2007, Venice, Italy
8. *Initial Performance of the IceCube Neutrino Observatory*  
JPS 2006, September 20, 2006, Nara, Japan
7. *IceCube Experiment: String 21 Performance*  
JPS 2005, September 12-15, 2005, Osaka, Japan
6. *Searches for the Supersymmetric Partner of the Bottom Quark*  
SUSY 2004, June 17-23, Tsukuba, Japan (*awarded travel support*)
5. *CDF Run 2 Searches for Physics Beyond the Standard Model Using Heavy Flavor Jets and Missing Transverse Energy*  
APS April Meeting 2004, May 1-4, Denver, CO, USA (*NSF travel support*)
4. *Search for the Supersymmetric Partner of the Bottom Quark using the CDF Detector at the Tevatron* (poster)  
Lepton Photon 2003, August 11-16, Batavia, IL, USA
3. *Test Beam Results for the CMS Forward Pixel Detector*  
New Perspectives 2001, June 13, Fermilab, Batavia, IL, USA
2. *Test Beam Results for the CMS Forward Pixel Detector*  
APS April Meeting 2001, April 28 - May 1, Washington, DC, USA
1. *CMS Forward Pixel Detector* (poster)  
The 2001 European School of High-Energy Physics, August 26 - September 8, Beatenberg, Switzerland

## Collaboration Meeting Talks

31.
  1. *Summary of the Beyond the Standard Model Working Group (plenary)*  
IceCube Collaboration Meeting, May 2017 Madison, WI, USA
30.
  1. *PINGU Camera System Overview*
  2. *Topics for BSM*

IceCube Collaboration Meeting, Oct 2016 Mainz, Germany
29.
  1. *Summary of the Beyond Standard Model Working Group (plenary)*
  2. *PINGU Camera System*
  3. *PINGU Dark Matter Sensitivities*

IceCube Collaboration Meeting, April 2016 Stony Brook, USA
28.
  1. *Enhanced photon traps for Hyper-K*

Hyper-K Pro-Collaboration Meeting, February 2016 Kashiwa, Japan
27.
  1. *Summary of the Beyond Standard Model Working Group (plenary)*
  2. *Update on PINGU Dark Matter Sensitivity Studies*

IceCube Collaboration Meeting, April 2015 Madison, USA
26.
  1. *PINGU Dark Matter Sensitivity Studies*
  2. *Camera system for PINGU*

IceCube Collaboration Meeting, October 2014 Geneva, Switzerland
25.
  1. *Summary of the Beyond Standard Model Working Group (plenary)*
  2. *Beyond Standard Model Strategies*

IceCube Collaboration Meeting, March 2014 Alberta, Canada
24.
  1. *Camera System for PINGU*
  2. *Beyond Standard Model Strategies*

IceCube Collaboration Meeting, October 2013 Munich, Germany
23.
  1. *Summary of the Dark Matter Working Group (plenary)*

IceCube Collaboration Meeting, March 2013 Madison, USA
22.
  1. *PINGU Dark Matter Sensitivity Studies*
  2. *Sensitivity for a 130GeV Neutrino Line*
  3. *Update on the Good Run List*

IceCube Collaboration Meeting, October 2012 Aachen, Germany
21.
  1. *PINGU Dark Matter Sensitivity Studies*

PINGU Workshop, May 3 – 5, 2012, Erlangen, Germany
20.
  1. *WIMP Session Summary (plenary)*
  2. *WIMP Perspectives for 2015 (plenary)*
  3. *PINGU Dark Matter Prospects*
  4. *Summary of ANTARES-IceCube WIMP Workshop in Marseille*

IceCube Collaboration Meeting, March 2012 Berkeley, CA, USA
19.
  1. *IceCube 79-86 good run list (plenary)*
  2. *Solar WIMP Searches with Cascades*
  3. *Dark Matter Sensitivity for IceCube Detector Upgrades*

IceCube Collaboration Meeting, Sep 19 - 23, 2011 Uppsala, Sweden
18.
  1. *Final Result of the Galactic Halo Analysis (plenary)*
  2. *IceCube Good Run List for 2010–2011*

IceCube Collaboration Meeting, May 20 - 23, 2011, Madison, WI, USA
17.
  1. *Galactic Halo Analysis Update*
  2. *Update on Galactic Halo and Earth WIMPs Sensitivity for DeepCore*
  3. *IceCube Good Run List*
  4. *Effective Volume Study for DeepCore using a ToyModel*

IceCube Collaboration Meeting, September 20 - 23, 2010, Brussels, Belgium

16.
  1. *Search for Dark Matter from Galactic Halo and Galactic Center (plenary)*
  2. *Halo WIMP Analysis*
  3. *The IceCube Good Run List (plenary)*
  4. *Plans for the Good Run List*

IceCube Collaboration Meeting, May 3 - 7 2010, Annapolis, MD, USA
15.
  1. *Halo Dark Matter Tutorial*
  2. *Dark Matter Halo Analysis*
  3. *Progress on Neutrino Oscillations*
  4. *Good Run List (plenary)*

IceCube Collaboration Meeting, September 2009, Berlin, Germany
14.
  1. *Good Run List Status (plenary)*
  2. *Dark Matter Halo Analysis*
  3. *Earth WIMP Analysis Status*
  4. *Neutrino Oscillations Analysis*

IceCube Collaboration Meeting, April 28 - May 2, 2009, Madison, WI, USA
13.
  1. *Dark Matter Halo Searches*
  2. *Update on the Search for Earth Wimps*
  3. *Update on the Neutrino Oscillations Analysis*
  4. *Good Run and Good DOM Lists*
  5. *Data Quality Report: IceCube 40-string Detector (plenary)*

IceCube Collaboration Meeting, September 15-19, 2008, Utrecht, Netherlands
12.
  1. *Good Run List 2007 and Plans / Goals for 2008*
  2. *Average Waveform Verification Analysis*

IceCube Collaboration Meeting, May 2008, Madison, USA
11.
  1. *The IceCube String Trigger*
  2. *Filter Development for IceCube-40*
  3. *Summary of Verification/Monitoring Plots (plenary)*
  4. *Good Run List Summary (plenary)*

IceCube Collaboration Meeting, October 6-10, 2007, Ghent, Belgium
10.
  1. *String Trigger and IceCube Low Energy Sensitivity*
  2. *Geometry Calibration with Down-going Muons*
  3. *Good Run List Proposal (plenary)*
  4. *Extremely High Energy Analysis Verification: Status & Plan*
  5. *Intrastring Timing for Calibration & Verification with Muons*
  6. *Digital Optical Module Verification*

IceCube Collaboration Meeting, April 24-28, 2007, Lake Geneva, WI, USA
9.
  1. *Plans for using AMANDA and commissioning of AMANDA/IceCube coincidence hardware and software*
  2. *Time Trends in the Data*
  3. *Laser Timing Calibration and Channel Maintenance*
  4. *Calibration & Verification Results, Current Status and Plans for 2007*
  5. *Golden DOMs (Absolute and Collection Efficiency Measurements)*

IceCube Collaboration Meeting, October 6-10, 2006, DESY Zeuthen, Germany
8.
  1. *Muon Reconstruction Users Perspective*
  2. *DOM Efficiency with Down-going Muons*
  3. *Verification and Simulation*

IceCube Analysis Meeting, June 21-24, 2006, University Park, USA
7.
  1. *AMANDA Timing Calibration*
  2. *Interstring Timing Verification with Down-going Muons*
  3. *DOM (Digital Optical Module) Efficiency Studies with Down-going Muons*

4. *Long Term IceCube Timing Stability Studies*  
IceCube Collaboration Meeting, April 9-14, 2006, Baton Rouge, USA
6. 1. *AMANDA Timing and Alpha Calibration using Down-going Muons*  
2. *DOM Sensitivity Map Analysis*  
IceCube Collaboration Meeting, September 25-29, 2005, Imperial College, London, Great Britain
5. *AMANDA Timing Calibrations with down-going muons*  
IceCube/AMANDA Collaboration Meeting, March 19-23, 2005, UC Berkeley, USA
4. *Search for Sbottom in Gluino Decays*  
CMS Week, September 20-24, 2004, CERN, Geneva, Switzerland
3. *Search for Gluino decaying into Sbottom and Bottom (plenary)*  
CDF Week, July 26-30, 2004, Batavia, IL, USA
2. *Search for Gluino into Sbottom and Bottom (plenary)*  
CDF Collaboration Meeting, September 18, 2003, Batavia, IL, USA
1. *Optimization of the SecVtx - Secondary Vertex Tagging Algorithm (plenary)*  
CDF Collaboration Meeting, January 23-24, 2003, Batavia, IL, USA

TEACHING  
EXPERIENCE

22. *General Physics I - Mechanics*  
Spring 2017, Sungkyunkwan University, Korea
21. *Introduction to Particle Physics (PHYS 3015)*  
Fall 2016, Sungkyunkwan University, Korea
20. *Special Topics: Dark Matter (PHYS 5178) (Graduate Course)*  
Fall 2016, Sungkyunkwan University, Korea
19. *Recent Discoveries in Astroparticle Physics (PHYS 4015) (Graduate Course)*  
Summer 2016, Sungkyunkwan University, Korea
18. *General Physics Experiments - Mechanics (Lab)*  
Spring 2016, Sungkyunkwan University, Korea
17. *General Physics I - Mechanics*  
Spring 2015, Sungkyunkwan University, Korea
16. *Introduction to Particle Physics (PHYS 3015)*  
Fall 2015, Sungkyunkwan University, Korea
15. *General Physics II - Electromagnetism*  
Fall 2015, Sungkyunkwan University, Korea
14. *General Physics Experiments - Mechanics (Lab)*  
Spring 2015, Sungkyunkwan University, Korea
13. *General Physics I - Mechanics*  
Spring 2015, Sungkyunkwan University, Korea
12. *Seminar - Astroparticle Physics (Graduate Course)*  
Fall 2014, Sungkyunkwan University, Korea
11. *General Physics II - Electromagnetism*  
Fall 2014, Sungkyunkwan University, Korea
10. *General Physics Experiments - Electromagnetism (Lab)*  
Fall 2014, Sungkyunkwan University, Korea

9. *Colloquium - Physics*  
Fall 2014, Sungkyunkwan University, Korea
8. *General Physics Experiments - Mechanics (Lab)*  
Spring 2014, Sungkyunkwan University, Korea
7. *General Physics I - Mechanics*  
Spring 2014, Sungkyunkwan University, Korea
6. *Particle Physics II - Beyond the Standard Model (Graduate Course)*  
Fall 2013, Sungkyunkwan University, Korea
5. *Guest Lectures - Astroparticle Physics 12167 (Graduate Course)*  
Fall 2012, Uppsala University, Sweden
4. *Mini-Guest Lecture Series - Particle Astrophysics*  
September 2012, Sungkyunkwan University, Korea
3. CCAPP Seminar Coordinator  
Fall 2010 and Spring 2011, Ohio State, USA
2. *Lecturer - GCOE Nagoya Winter School*  
February 2010, Nagoya University, Japan
1. *Instructor for various Physics labs for Physics Majors and Engineers*  
1999, 2000, Purdue University, USA

## OUTREACH

- Dark Matter Day 2017 (Social Media Campaign + public lecture at UW Madison) (youtube)
- IceCube Master Class (2016 @ SKKU / 2017 @ University of Hawaii)
- News & Interviews for YTN Science Korea, Financial Times Korea, Naver News Korea, ...
- Korean High school student research project — Detecting Cosmic Rays with CMOS cameras
- Organizer of several public lectures at Ohio State
- Talks at Ohio State Undergraduate Physics Society meetings
- Organizer of Career Development Workshops at IceCube Meetings
- OSU Department of Astronomy Summer Undergraduate Research Experience student co-Advisor (2009 and 2012)
- News Articles (Sunday Science Article in the Columbus Dispatch “Trapping space ghosts” May 17, 2009)
- Several public talks and guiding tours and observations at the Volkssternwarte Hannover (Public observatory), Germany

## MEMBERSHIP

- American Physical Society APS (since 2001)
- Korean Physical Society KPS (since 2013)
- American Geophysical Union AGU (since 2016)