# Kent Leung

leungk@montclair.edu | Mail: 1 Normal Ave., Montclair, NJ 07043, USA | https://www.montclair.edu/faculty-staff/kent-leung

## DEGREES

2007 – 2013 **Dr. Rer. Nat. (Doctor of Natural Science) in Physics**
*Magna cum laude (passed with distinction)*
**Technical University of Munich** (TUM), Garching, Germany
#28 (#18 in Physics) QS World University Ranking 2024

2005 – 2007 **Master of Science in Physics**
*First Class Honors*
**University of Auckland** (UoA), New Zealand
#=65 QS World University Ranking 2024

2002 – 2005 **Bachelor of Science in Physics**
University of Auckland, New Zealand

## POSITIONS

2021 – current Assistant Professor of Physics & Astronomy
**Montclair State University**, Montclair, NJ, USA
(#158 National University US News Ranking, 2026)

2020 – 2021 Assistant Research Professor of Physics
**Duke University**, Durham, NC, USA
(#27 Times World Ranking, #6 National US News Ranking, 2025)

2017 – 2020 Research Assistant Professor of Physics
**North Carolina State University**, Raleigh, NC, USA
(#272 QS World Ranking, #58 National US News Ranking, 2025)

2013 – 2017 Post-Doctoral Research Scholar in Physics
**North Carolina State University**, Raleigh, NC, USA

2007 – 2011 PhD Research Fellowship (nuclear and particle physics group)
**Institut Laue-Langevin** (ILL), Grenoble, France

2004 – 2007 Teaching Assistant & Undergraduate Laboratory Technician (Physics dept.)
**University of Auckland** (UoA), New Zealand

## EXTERNAL FUNDING

**2023-2028: National Science Foundation – Faculty Early Career Development Program** (NSF-CAREER). "Low-energy nuclear physics and fundamental symmetries with neutrons and cryogenic technologies." Sole P.I. **$616k**
Award Number 2232117. https://www.nsf.gov/awardsearch/showAward?AWD_ID=2232117

**2022-2027: Oak Ridge National Laboratory** sub-contracted funds: "nEDM@SNS Measurement Cell Development activities." Sole P.I. Original award: **$436k.** Due to Department of Energy funding cut, received $121k and completed sub-contract 2024.

**2022: National Science Foundation** – Major Research Instrumentation (NSF-MRI): "Acquisition of a High-Resolution Atomic Force Microscope at Montclair State University." **$209k**. PI: Dr. Glen O'Neil. co-PIs: K. Leung, A. Sarkar, I.H. Lee, and L. Wu.

**2020: US. Department of Energy:** "Supplemental funds to develop a liquid $^3$He cryogenic target at the High Intensity Gamma-Ray Source of TUNL, Duke University". Co-PI **$70k**

**2014-2020: US Department of Energy, Oak Ridge National Lab-managed, nEDM@SNS sub-contracted funds.** Work-package Leader, Manager & Co-PI **$210k**. To develop NCSU "class 1000" clean room & produce prototype measurement cells, UCN storage experiments, develop new coatings, outgassing studies, room temperature VUV source, cell development and production for UCN storage measurements, cell activation task force activities.

## PUBLICATIONS

*More details at my maintained Google Scholar profile:* https://scholar.google.com/citations?user=_pf63jQAAAAJ

• *Characterization of CRYO ASIC for charge readout in the nEXO experiment*
Z Li, M Yu, E Angelico, A Atencio, A Gupta, P Knauss, A Pena-Perez, BG Lenardo, P Acharya, A Amy, A Anker, IJ Arnquist, J Bane, V Belov, T Bhatta, A Bolotnikov, J Breslin, PA Breur, JP Brodsky, E Brown, T Brunner, B Burnell, E Caden, GF Cao, LQ Cao, D Cesmecioglu, D Chernyak, M Chiu, R Collister, M Marquis, T Daniels, L Darroch, R DeVoe, ML di Vacri, X Defay, YY Ding, D Doering, MJ Dolinski, A Dragone, B Eckert, A Emara, N Fatemighomi, W Fairbank, BT Foust, D Gallacher, N Gallice, A Gaur, W Gillis, F Girard, A Gorham, K Gracequist, G Gratta, CA Hardy, J Hasi, S Hedges, M Heffner, E Hein, H Hernandez Herrera, JD Holt, A Iverson, XS Jiang, A Karelin, D Keblbeck, C Kenney, I Kotov, A Kuchenkov, KS Kumar, S Lavoie, A Larson, MB Latif, KG Leach, DS Leonard, G Lessard, KKH Leung, G Li, X Li, C Licciardi, R Lindsay, R MacLellan, S Majidi, C Malbrunot, B Markovic, J Masbou, M Medina-Peregrina, S Mngonyama, B Mong, DC Moore, K Ni, I Nitu, A Nolan, SC Nowicki, JC Ondze, A Odian, JL Orrell, GS Ortega, L Pagani, H Peltz Smalley, A Piepke, A Pocar, S Prentice, V Radeka, E Raguzin, R Rai, H Rasiwala, D Ray, B Reese, S Rescia, F Retiere, G Richardson, V Riot, R Ross, L Rota, PC Rowson, R Saldanha, S Sangiorgio, S Sekula, T Shetty, L Si, F Spadoni, V Stekhanov, XL Sun, S Thibado, T Totev, S Triambak, RHM Tsang, OA Tyuka, T Vallivilayil John, E van Bruggen, M Vidal, S Viel, M Walent, H Wang, QD Wang, M Watts, W Wei, M Wehrfritz, LJ Wen, S Wilde, XM Wu, H Xu, HB Yang, L Yang, O Zeldovich, J Zhao
Submitted to ***Journal of Instrumentation*** (JINST)

• *Design of a high voltage delivery system for noble liquid time projection chambers*
R Saldanha, L Pagani, E Angelico, EP Bernard, B Chana, S Delaquis, R DeVoe, M Elbeltagi, S Ferrara, D Goeldi, R Gornea, A Odian, GS Ortega, CT Overman, L Placzek, PC Rowson, K Skarpaas, F Spadoni, P Acharya, A Amy, A Anker, IJ Arnquist, A Atencio, J Bane, V Belov, T Bhatta, A Bolotnikov, J Breslin, PA Breur, E Brown, T Brunner, B Burnell, E Caden, GF Cao, LQ Cao, D Cesmecioglu, D Chernyak, M Chiu, R Collister, M Marquis, T Daniels, L Darroch, ML Di Vacri, YY Ding, MJ Dolinski, B Eckert, A Emara, N Fatemighomi, W Fairbank, B Foust, D Gallacher, N Gallice, A Gaur, W Gillis, F Girard, G Gratta, CA Hardy, S Hedges, E Hein, JD Holt, A Iverson, XS Jiang, A Karelin, D Keblbeck, A Kuchenkov, KS Kumar, A Larson, MB Latif, S Lavoie, KG Leach, BG Lenardo, DS Leonard, KKH Leung, H Lewis, G Li, X Li, Z Li, C Licciardi, R Lindsay, R MacLellan, S Majidi, J Masbou, M Medina-Peregrina, S Mngonyama, B Mong, DC Moore, K Ni, I Nitu, A Nolan, SC Nowicki, JC Nzobadila Ondze, JL Orrell, A Pena-Perez, H Peltz Smalley, A Piepke, A Pocar, E Raguzin, R Rai, H Rasiwala, D Ray, S Rescia, F Retière, G Richardson, V Riot, N Rocco, R Ross, S Sangiorgio, S Sekula, T Shetty, L Si, V Stekhanov, XL Sun, S Thibado, T Totev, S Triambak, RHM Tsang, OA Tyuka, E van Bruggen, M Vidal, S Viel, QD Wang, M Watts, W Wei, M Wehrfritz, LJ Wen, S Wilde, M Worcester, XM Wu, H Xu, HB Yang, L Yang, M Yu, O Zeldovich, J Zhao
**Nuclear Instruments and Methods in Phys. Res. A.** 1091:171718 (Nov 2026) doi:10.1016/j.nima.2026.171718

• *From Commissioning to Precision Data-Taking: Resolving Operational Challenges in the Nab Detector Systems*
L. J. Broussard, H. Acharya, R. Alarcon, S. Baeßler, M. Benoit, K. Borah, C. L. Britton, E. Brown, J. Choi, S. Clymer, C. Crawford, N. Ericson, L. Fabris, N. Fomin, J. Fry, R. Godri, F. M. Gonzalez, A. Hagemeier, J. Hamblen, S. Hollander, A. Jezghani, K. Leung, N. Macsai, M. Makela, D. Mathews, P. L. McGaughey, A. Mendelsohn, J. Mirabal, P. E. Mueller, A. Nelsen, S. I. Penttilä, D. Počanić, J. C. Ramsey, K. Reed, L. Richburg, A. Saunders, W. Schreyer, A. Shelby, A. R. Young
**EPJ Web of Conferences** 378, 04001 (Aug 2026). doi:10.1051/epjconf/202637804001

• *Ultra-pure Nickel for Structural Components of Low-Radioactivity Instruments*
TJ Roosendaal, CT Overman, GS Ortega, TD Schlieder, ND Rocco, LKS Horkley, KP Hobbs, K Harouaka, JL Orrell, P Acharya, A Amy, E Angelico, A Anker, IJ Arnquist, A Atencio, J Bane, V Belov, EP Bernard, T Bhatta, A Bolotnikov, J Breslin, PA Breur, JP Brodsky, E Brown, T Brunner, B Burnell, E Caden, LQ Cao, D Cesmecioglu, SA Charlebois, D Chernyak, M Chiu, T Daniels, L Darroch, R DeVoe, ML Di Vacri, MJ Dolinski, B Eckert, M Elbeltagi, A Emara, W Fairbank, BT Foust, D Gallacher, N Gallice, W Gillis, A Gorham, G Gratta, CA Hardy, SC Hedges, M Heffner, E Hein, JD Holt, A Iverson, A Karelin, IV Kotov, A Kuchenkov, A Larson, MB Latif, S Lavoie, KG Leach, BG Lenardo, DS Leonard, KKH Leung, H Lewis, X Li, Z Li, C Licciardi, R Lindsay, R MacLellan, S Majidi, C Malbrunot, M Marquis Masbou, M Medina-Peregrina, S Mngonyama, B Mong, DC Moore, XE Ngwadla, K Ni, A Nolan, SC Nowicki, JC Ondze, A Odian, L Pagani, H Peltz Smalley, A Pena-Perez, A Piepke, A Pocar, S Prentice, V Radeka, R Rai, H Rasiwala, D Ray, S Rescia, G Richardson, V Riot, R Ross, PC Rowson, R Saldanha, S Sangiorgio, S Sekula, T Shetty, L Si, J Soderstrom, F Spadoni, V Stekhanov, XL Sun, S Thibado, T Totev, S Triambak, RHM Tsang, OA Tyuka, E van Bruggen, M Vidal, M Walent, YG Wang, QD Wang, MP Watts, M Wehrfritz, LJ Wen, S Wilde, M Worcester, XM Wu, H Xu, HB Yang, L Yang, O Zeldovich
**Nuclear Instruments and Methods in Phys. Res. A.** 1087:171402 (July 2026) doi:10.1016/j.nima.2026.171402

• *Superconducting properties of commercially available solders for low-field applications*
C. Hickman, KKH Leung (corresponding), AH Al-Tawhid, BW Filippone, PR Huffman, E. Korobkina, DP Kumah, CM Swank
**Cryogenics** (Elsevier) 153:104219 (Jan 2026). doi:10.1016/j.cryogenics.2025.104219

• *Ultra-sensitive radon assay using an electrostatic chamber in a recirculating system*
A. Anker, P.A. Breur, B. Mong, P. Acharya, A. Amy, E. Angelico, I.J. Arnquist, A. Atencio, J. Bane, V. Belov, E.P. Bernard, T. Bhatta, A. Bolotnikov, J. Breslin, J.P. Brodsky, S. Bron, E. Brown, T. Brunner, B. Burnell, E. Caden, L.Q. Cao, G.F. Cao, D. Cesmecioglu, D. Chernyak, M. Chiu, R. Collister, T. Daniels, L. Darroch, R. DeVoe, M.L. di Vacri, Y.Y. Ding, M.J. Dolinski, A. Dragone, B. Eckert, M. Elbeltagi, A. Emara, W. Fairbank, N. Fatemighomi, B. Foust, Y.S. Fu, D. Gallacher, N. Gallice, G. Giacomini, W. Gillis, A. Gorham, R. Gornea, G. Gratta, Y.D. Guan, C.A. Hardy, S. Hedges, M. Heffner, E. Hein, J.D. Holt, A. Iverson, X.S. Jiang, A. Karelin, D. Keblbeck, I. Kotov, A. Kuchenkov, K.S. Kumar, A. Larson, M.B. Latif, K.G. Leach, B.G. Lenardo, A. Lennarz, D.S. Leonard, K. Leung, H. Lewis, G. Li, X. Li, Z. Li, C. Licciardi, R. Lindsay, R. MacLellan, S. Majidi, C. Malbrunot, M. Marquis, J. Masbou, M. Medina-Peregrina, S. Mngonyama, D.C. Moore, X.E. Ngwadla, K. Ni, A. Nolan, S.C. Nowicki, J.C. Nzobadila Ondze, A. Odian, J.L. Orrell, G.S. Ortega,

C.T. Overman, L. Pagani, H. Peltz Smalley, A. Perna, A. Piepke, A. Pocar, V. Radeka, E. Raguzin, R. Rai, H. Rasiwala, D. Ray, S. Rescia, F. Retière, G. Richardson, N. Rocco, R. Ross, P.C. Rowson, R. Saldanha, S. Sangiorgio, S. Sekula, T. Shetty, L. Si, F. Spadoni, V. Stekhanov, X.L. Sun, S. Thibado, T. Totev, S. Triambak, R.H.M. Tsang, O.A. Tyuka, E. van Bruggen, M. Vidal, S. Viel, M. Walent, H. Wang, Q.D. Wang, Y.G. Wang, M. Watts, M. Wehrfritz, W. Wei, L.J. Wen, U. Wichoski, S. Wilde, M. Worcester, X.M. Wu, H. Xu, H.B. Yang, L. Yang, M. Yu, O. Zeldovich, J. Zhao.
**Nuclear Instruments and Methods in Phys. Res. A** (1081), 170876 (Jan 2025) doi:10.1016/j.nima.2025.170876.

• *Sensitivity of nEXO to $^{136}$Xe charged-current interactions: Background-free searches for solar neutrinos and fermionic dark matter.*
G Richardson, BG Lenardo, M Yu, D Gallacher, R Saldanha, P Acharya, S Al Kharusi, A Amy, E Angelico, A Anker, IJ Arnquist, A Atencio, J Bane, V Belov, EP Bernard, T Bhatta, A Bolotnikov, J Breslin, PA Breur, JP Brodsky, S Bron, E Brown, T Brunner, B Burnell, E Caden, GF Cao, LQ Cao, D Cesmecioglu, D Chernyak, M Chiu, R Collister, T Daniels, L Darroch, R DeVoe, ML di Vacri, MJ Dolinski, B Eckert, M Elbeltagi, A Emara, N Fatemighomi, W Fairbank, BT Foust, N Gallice, G Giacomini, W Gillis, A Gorham, R Gornea, K Gracequist, G Gratta, CA Hardy, SC Hedges, M Heffner, E Hein, JD Holt, A Iverson, P Kachru, A Karelin, D Keblbeck, I Kotov, A Kuchenkov, KS Kumar, A Larson, MB Latif, S Lavoie, KG Leach, A Lennarz, DS Leonard, KKH Leung, H Lewis, G Li, X Li, Z Li, C Licciardi, R Lindsay, R MacLellan, S Majidi, C Malbrunot, M Marquis, J Masbou, M Medina-Peregrina, S Mngonyama, B Mong, DC Moore, XE Ngwadla, K Ni, A Nolan, SC Nowicki, JC Nzobadila Ondze, A Odian, JL Orrell, GS Ortega, L Pagani, H Peltz Smalley, A Peña Perez, A Piepke, A Pocar, V Radeka, R Rai, H Rasiwala, D Ray, S Rescia, F Retière, V Riot, N Rocco, R Ross, PC Rowson, S Sangiorgio, S Sekula, T Shetty, L Si, J Soderstrom, F Spadoni, V Stekhanov, XL Sun, S Thibado, T Totev, S Triambak, RHM Tsang, OA Tyuka, T Vallivilayil John, E van Bruggen, M Vidal, S Viel, J Vuilleumier, M Walent, H Wang, QD Wang, MP Watts, W Wei, M Wehrfritz, LJ Wen, U Wichoski, S Wilde, M Worcester, XM Wu, H Xu, HB Yang, L Yang, O Zeldovich, (nEXO Collaboration)
**Physical Review D** 112, 103010 (Nov 2025) doi:10.1103/6h4p-nk1y

• *Electric charging effects on insulating surfaces in cryogenic liquids*.
W. Korsch, M. Broering, A. Timsina, K. K. H. Leung, J. Abney, D. Budker, B. W. Filippone, J. He, S. Kandu, M. McCrea, M. Roy, C. Swank, and W. Yao.
**Review of Scientific Instruments**, 95(4):043101, 04 (Apr 2024). doi:10.1063/5.0195101

• *Fundamental Neutron Physics: a White Paper on Progress and Prospects in the US*
R. Alarcon, A. Aleksandrova, S. Baeßler, D. H. Beck, T. Bhattacharya, M. Blatnik, T. J. Bowles, J. D. Bowman, J. Brewington, L. J. Broussard, A. Bryant, J. F. Burdine, J. Caylor, Y. Chen, J. H. Choi, L. Christie, T. E. Chupp, V. Cianciolo, V. Cirigliano, S. M. Clayton, B. Collett, C. Crawford, W. Dekens, M. Demarteau, D. DeMille, G. Dodson, B. W. Filippone, N. Floyd, N. Fomin, J Fry, K. Fuyuto, S. Gardner, R. Godri, R. Golub, F. Gonzalez, G. L. Greene, V. Gudkov, R. Gupta, J. Hamblen, L. Hayen, J C. Hendrus, K. Hickerson, F. B. Hills, A. T. Holley, S. Hoogerheide, M. Hubert, P. R. Huffman, S. K. Imam, T. M. Ito, L. Jin, G. Jones, A. Komives, E. Korobkina, W. Korsch, K.K.H. Leung, C.-Y. Liu, K.-F. Liu, J. C. Long, D. Mathews, A. Mendelsohn, E. Mereghetti, P. Mohanmurthy, C. L. Morris, P. Mueller, H. P. Mumm, A. Nelsen, A. Nicholson, J. Nico, C. M. O'Shaughnessy, P. A. Palamure, S. Pastore, R. W. Pattie Jr., N. S. Phan, J. A. Pioquinto, B. Plaster, D. Počanić, H. Rahangdale, R. Redwine, A. Reid, D. J. Salvat, A. Saunders, D. Schaper, C.-Y. Seng, M. Singh, A. Shindler, W. M. Snow, Z. Tang, A. Walker-Loud, D. K.-T. Wong, F. Wietfeldt, A. R. Young.
**Community White paper** https://arxiv.org/abs/2308.09059 (Aug 2023)

• *Growing solid deuterium for UCN production*
E. Korobkina, I. Berkutov, R. Golub, P. Huffman, C. Hickman, K. Leung, G. Medlin, M.J. Morano, T. Rao, C. Teander, C. White, A.R. Young
**Journal of Neutron Research**. HighNESS Workshop 2022. Vol. 24, no. 2, pp.179-191 (2022) doi:10.3233/JNR-220010

• *Proton Compton Scattering from Linearly Polarized Gamma Rays*
X. Li, M.W. Ahmed, A. Banu, C. Bartram, B. Crowe, E.J. Downie, M. Emamian, G. Feldman, H. Gao, D. Godagama, H.W. Grießhammer, C.R. Howell, H.J. Karwowski, D.P. Kendellen, M.A. Kovash, K.K.H. Leung, D.M. Markoff, J.A. McGovern, S. Mikhailov, R.E. Pywell, M.H. Sikora, J.A. Silano, R.S. Sosa, M.C. Spraker, G. Swift, P. Wallace, H.R. Weller, C.S. Whisnant, Y.K. Wu, and Z.W. Zhao
**Physical Review Letters** 128(13):132502 (Apr 2022), doi:10.1103/PhysRevLett.128.132502
Highlight articles from the Department of Energy:
https://www.energy.gov/science/np/articles/how-stiff-proton https://www.eurekalert.org/news-releases/966611

• *Comparison of MCNP thermal scattering laws to inelastic neutron scattering data*
C.M. Lavelle, K.K.H. Leung, and T. M. Ito
**Nuclear Instruments and Methods in Phys. Res. A** 1027, 166255 (Mar 2022), doi:10.1016/j.nima.2021.166255

• *Electric dipole moments and the search for new physics*
Ricardo Alarcon, Jim Alexander, Vassilis Anastassopoulos, Takatoshi Aoki, Rick Baartman, Stefan Baeßler, Larry Bartoszek, Douglas H. Beck, Franco Bedeschi, Robert Berger, Martin Berz, Hendrick L. Bethlem, Tanmoy Bhattacharya, Michael Blaskiewicz, Thomas Blum, Themis Bowcock, Anastasia Borschevsky, Kevin Brown, Dmitry Budker, Sergey Burdin, Brendan C. Casey, Gianluigi Casse, Giovanni Cantatore, Lan Cheng, Timothy Chupp, Vince Cianciolo, Vincenzo Cirigliano, Steven M. Clayton, Chris Crawford, B. P. Das, Hooman Davoudiasl, Jordy de Vries, David DeMille, Dmitri Denisov, Milind V. Diwan, John M. Doyle, Jonathan Engel, George Fanourakis, Renee Fatemi, Bradley W. Filippone, Victor V. Flambaum, Timo Fleig, Nadia Fomin, Wolfram Fischer, Gerald Gabrielse, R. F. Garcia Ruiz, Antonios Gardikiotis, Claudio Gatti, Andrew Geraci, James Gooding, Bob Golub, Peter Graham, Frederick Gray, W. Clark Griffith, Selcuk Haciomeroglu, Gerald Gwinner, Steven Hoekstra, Georg H. Hoffstaetter, Haixin Huang, Nicholas R. Hutzler, Marco Incagli, Takeyasu M. Ito, Taku Izubuchi, Andrew M. Jayich, Hoyong Jeong, David Kaplan, Marin Karuza, David Kawall, On Kim, Ivan Koop, Wolfgang Korsch, Ekaterina Korobkina, Valeri Lebedev, Jonathan Lee, Soohyung Lee, Ralf Lehnert, Kent K. H. Leung, Chen-Yu Liu, Joshua

Long, Alberto Lusiani, William J. Marciano, Marios Maroudas, Andrei Matlashov, Nobuyuki Matsumoto, Richard Mawhorter, Francois Meot, Emanuele Mereghetti, James P. Miller, William M. Morse, James Mott, Zhanibek Omarov, Luis A. Orozco, Christopher M. O'Shaughnessy, Cenap Ozben, SeongTae Park, Robert W. Pattie Jr., Alexander N. Petrov, Giovanni Maria Piacentino, Bradley R. Plaster, Boris Podobedov et al. (43 additional authors not shown) **Community White paper** https://arxiv.org/abs/2203.08103 (2022)

• *Compton scattering from $^4$He at the TUNL HI$\gamma$S facility*
X. Li, M.W. Ahmed, A. Banu, C. Bartram, B. Crowe, E.J. Downie, M. Emamian, G. Feldman, H. Gao, D. Godagama, H.W. Grießhammer, C.R. Howell, H.J. Karwowski, D.P. Kendellen, M.A. Kovash, K.K.H. Leung, D. Markoff, S. Mikhailov, R.E. Pywell, M.H. Sikora, J.A. Silano, R.S. Sosa, M.C. Spraker, G. Swift, P. Wallace, H.R. Weller, C.S. Whisnant, Y.K. Wu, and Z.W. Zhao
**Physical Review C** 101, 034618 (2020), doi:10.1103/PhysRevC.101.034618

• *A next-generation inverse-geometry spallation-driven ultracold neutron source*
K.K.H. Leung, G. Muhrer, T. Hügle, T.M. Ito, E.M. Lutz, M. Makela, C.L. Morris, R.W. Pattie Jr., A. Saunders, A.R. Young
**Journal of Applied Physics** 126(22):224901 (2019), doi:10.1063/1.5109879 (Editor's Pick)
American Institute of Physics, "Scilight" highlight article: doi:10.1063/10.0000359

• *The neutron electric dipole moment experiment at the Spallation Neutron Source*
K.K.H. Leung, M. Ahmed, R. Alarcon, A. Aleksandrova, S. Baeßler, L. Barrón-Palos, L. Bartoszek, D.H. Beck, J. Bessuille, M.A. Blatnik, M. Broering, L.J. Broussard, M. Busch, R. Carr, P.-H. Chu, V. Cianciolo, S.M. Clayton, M.D. Cooper, C. Crawford, S.A. Currie, C. Daurer, R. Dipert, K. Dow, D. Dutta, Y. Efremenko, C.B. Erickson, B.W. Filippone, N. Fomin, H. Gao, R. Golub, C.R. Gould, G.L. Greene, D.G. Haase, D. Hasell, A.I. Hawari, M.E. Hayden, A.T. Holley, R.J. Holt, P.R. Huffman, E. Ihloff, T.M. Ito, J. Kelsey, Y.J. Kim, J. Koivuniemi, E. Korobkina, W. Korsch, S.K. Lamoreaux, E. Leggett, A. Lipman, C.-Y. Liu, J. Long, S.W.T. MacDonald, M. Makela, A. Matlashov, J. Maxwell, M. McCrea, M. Mendenhall, H.O. Meyer, R. Milner, P. Mueller, N. Nouri, C.M. O'Shaughnessy, C. Osthelder, J.-C. Peng, S. Penttila, N.S. Phan, B. Plaster, J. Ramsey, T. Rao, R. P. Redwine, A. Reid, A. Saftah, G.M. Seidel, I.F. Silvera, S. Slutsky, E. Smith, W.M. Snow, W. Sondheim, S. Sosothikul, T.D.S. Stanislaus, X. Sun, C.M. Swank, Z. Tang, R. Tavakoli Dinani, E. Tsentalovich, C. Vidal, W. Wei, C.R. White, S.E. Williamson, L. Yang, W. Yao, A.R. Young
**European Physical Journal Web of Conferences** 219, 02005 (2019) (Peer-reviewed). doi:10.1051/epjconf/201921902005

• *A new cryogenic apparatus to search for the neutron electric dipole moment*
M. W. Ahmed, R. Alarcon, A. Aleksandrova, S. Baessler, L. Barron-Palos, L. M. Bartoszek, D. H. Beck, M. Behzadipour, J. Bessuille, M. Blatnik, M. Broering, L. J. Broussard, M. Busch, R. Carr, V. Cianciolo, S. M. Clayton, M. D. Cooper, C. Crawford, S. A. Currie, C. Daurer, R. Dipert, K. Dow, D. Dutta, Y. Efremenko, C. B. Erickson, B. W. Filippone (Corresponding author), N. Fomin, H. Gao, R. Golub, C. R. Gould, G. Greene, D. G. Haase, D. Hasell, A. I. Hawari, M.E. Hayden A. Holley, R. J. Holt, P. R. Huffman, E. Ihloff, S. K. Imam, T. M. Ito, M. Karcz, J. Kelsey, D. P. Kendellen, Y. J. Kim, E. Korobkina, W. Korsch, S. K. Lamoreaux, J. Leggett, K. K. H. Leung, A. Lipman, C. Y. Liu, J. Long, S. W. T. MacDonald, M. Makela, A. Matlashov, J. D. Maxwell, M. Mendenhall, H. O. Meyer, R. G. Milner, P. E. Mueller, N. Nouri, C. M. O'Shaughnessy, C. Osthelder, J. C. Peng, S. I. Penttila, N. S. Phan, B. Plaster, J. C. Ramsey, T. M. Rao, R. P. Redwine, A. Reid A. Saftah, G. M. Seidel, I. Silvera S. Slutsky, E. Smith, W. M. Snow, W. Sondheim, S. Sosothikul, T. D. S. Stanislaus, X. Sun, C. M. Swank, Z. Tang, R. Tavakoli Dinani E. Tsentalovich, C. Vidal, W. Wei, C. R. White, S. E. Williamson, L. Yang, W. Yao, A. Young
**Journal of Instrumentation** 14(11):11017 (2019) doi:10.1088/1748-0221/14/11/p11017

• *Solid deuterium surface degradation at ultracold neutron sources*
A. Anghel, T. L. Bailey, G. Bison, B. Blau, L. J. Broussard, S. M. Clayton, C. Cude-Woods, M. Daum, A. Hawari, N. Hild, P. Huffman, T. M. Ito, K. Kirch, E. Korobkina, B. Lauss, K. Leung, E. M. Lutz, M. Makela, G. Medlin, C. L. Morris, R. W. Pattie, D. Ries, A. Saunders, P. Schmidt-Wellenburg, V. Talanov, A. R. Young, B. Wehring, C. White, M. Wohlmuther, G. Zsigmond
**The European Physical Journal A**, 54(9):148, 9 (2018) doi:10.1140/epja/i2018-12594-2 (EPJ-A highlights)

• *Spin flip loss in magnetic confinement of ultracold neutrons for neutron lifetime experiments*
A. Steyerl, K.K.H. Leung, C. Kaufman, G. Müller, and S.S. Malik
**Physical Review C** 95, 035502 (2017) doi:10.1103/PhysRevC.95.035502

• *Neutron lifetime measurements and effective spectral cleaning with an ultracold neutron trap using a vertical Halbach octupole permanent magnet array*
K.K.H. Leung, P. Geltenbort, S. Ivanov, F. Rosenau, and O. Zimmer.
**Physical Review C** 94, 045502 (2016). doi:10.1103/PhysRevC.94.045502

• *Position-sensitive detection of ultracold neutrons with an imaging camera and its implications to spectroscopy*
Wanchun Wei, L.J. Broussard, M.A. Hoffbauer, M. Makela, C.L. Morris, Z. Tang, E.R. Adamek, N.B. Callahan, S.M. Clayton, C. Cude-Woods, S. Currie, E.B. Dees, X. Ding, P.Geltenbort, K.P. Hickerson, A.T. Holley, T.M. Ito, K.K. Leung, C.-Y. Liu, D.J. Morley, Jose D. Ortiz, R.W. Pattie Jr., J.C. Ramsey, A. Saunders, S.J. Seestrom, E.I.Sharapov, S.K. Sjue, J. Wexler, T.L. Womacka, A.R. Young, B.A. Zeck, Zhehui Wang
**Nuclear Instruments and Methods in Phys. Res. A**, 830, 36-43 (2016). doi:10.1016/j.nima.2016.05.058

• *Ultracold neutron production and up-scattering in superfluid helium between 1.1 K and 2.4 K*

K.K.H. Leung, S. Ivanov, F. M. Piegsa, M. Simson, and O. Zimmer.
**Physical Review C**, 93.025501 (2016). doi:10.1103/PhysRevC.93.025501

• *Experimental study of ultracold neutron production in pressurized superfluid helium*
P. Schmidt-Wellenburg, J. Bossy, E. Farhi, M. Fertl, K.K.H. Leung, A. Rahli, T. Soldner, and O. Zimmer.
**Physical Review C**, 92:024004 (2015). doi:10.1103/PhysRevC.92.024004

• *A comparison of two magnetic ultra-cold neutron trapping concepts using a Halbach-octupole array*
K. Leung, S. Ivanov, F. Martin, F. Rosenau, M. Simson, and O. Zimmer. **Next Generation Experiments to Measure the Neutron Lifetime:** *proceedings of the 2012 Workshop,* World Scientific (2014) (Peer-reviewed). doi:10.1142/9016

• *New source for ultra-cold neutrons at the Institut Laue-Langevin*
F.M. Piegsa, M. Fertl, S.N. Ivanov, M. Kreuz, K.K.H. Leung, P. Schmidt-Wellenburg, T. Soldner, and O. Zimmer.
**Physical Review C,** 90:015501 (2014). doi:10.1103/PhysRevC.90.015501

• *Proposed neutron lifetime measurement using a hybrid magnetic trap for ultra-cold neutrons*
K.K.H. Leung and O. Zimmer.
**Nuclear Instruments and Methods in Phys. Res. A,** 611 (2-3), 181-185 (2009). doi:10.1016/j.nima.2009.07.087

• *Half-life of the superallowed positron emitter Carbon-10*
P. H. Barker, K.K.H. Leung, and A. P. Byrne.
**Physical Review C** 79, 024311 (2009). doi:10.1103/PhysRevC.79.024311

• *The Proton Spectrum in Neutron Beta Decay: Latest Results with the aSPECT Spectrometer*
G. Konrad, F. Ayala Guardia, S. Baessler, M. Borg, F. Gluck, W. Heil, I. Konorov, K.K.H. Leung, R. Munoz Horta, M. Simson, Y. Sobolev, T. Soldner, H.-F. Wirth, and O. Zimmer.
**Nuclear Physics A**, 827 (1-4), PANIC08 - Proceedings of the 18th Particles and Nuclei International Conference, (2009). doi:10.1016/j.nuclphysa.2009.05.114

• *Measuring the proton spectrum in neutron decay – latest results with aSPECT*
M. Simson, F. Ayala Guardia, S. Baeßler, M. Borg, F. Gluck, W. Heil, I. Konorov, G. Konrad, R. Munoz Horta, K.K.H. Leung, Yu. Sobolev, T. Soldner, and H.-F. Wirth.
**Nuclear Instruments and Methods in Phys. Res. A**, 611 (2-3), 203-206 (2009). doi:10.1016/j.nima.2009.07.068

• *Notable acknowledgements:*

- D. Dubbers and M.G. Schmidt. The neutron and its role in cosmology and particle physics. **Reviews of Modern Physics** 83:1111 (2011). doi:10.1103/RevModPhys.83.1111

- T.E. Chupp, P. Fierlinger, M.J. Ramsey-Musolf, and J.T. Singh. Electric dipole moments of atoms, molecules, nuclei, and particles. **Reviews of Modern Physics** 91:015001 (2019). doi:10.1103/RevModPhys.91.015001

## THESES

• Doctoral thesis (2013), Technical University of Munich & Institut Laue Langevin. Advisor: Dr. Oliver Zimmer
*"Development of a new superfluid helium ultra-cold neutron source and a new magnetic trap for neutron lifetime measurements"*
http://mediatum.ub.tum.de/node?id=1119646

• Masters thesis (2009), University of Auckland. Advisor: Dr. Paul Barker
*"A New Method for Measuring the Half-Life of $^{10}C$"* http://arxiv.org/abs/0911.5325v1

## INVITED TALKS

**University of Kentucky,** Lexington, KY. Physics Department Seminar. "From induced to permanent neutron EDMs: Compton@HIGS and nEDM-Superfluid at Montclair State" (Oct 2026).

**Paul Scherrer Institute neutron Electric Dipole Moment workshop 2026** (Aug 2026). Mattli Antoniushaus, Morschach, Switzerland. *"Beyond Ramsey: nEDM-Superfluid in Europe and progress towards.*

**New Science and Applications at the SNS**, *Oak Ridge National Laboratory, TN.* (Jun 2026)
*"A high-flux superfluid-helium spallation-driven Ultracold Neutron Source concept for the SNS"*

**EDMs 2026 (Electric Dipole Moments 2026) Complementary Experiments and Theory Connections: WE-Heraeus Workshop, Les Houches School of Physics, France** (Mar 2026). "*Beyond Ramsey: nEDM techniques with Superfluid $^4$He for reaching $10^{-28}$ e.cm sensitivity*"(also chaired a session).

**The 5th Nuclear Photonics Conference, Technical University Darmstadt, Germany** (Oct 2025). "*Proton & Neutron Polarizabilities with Compton Scattering from Low-Mass Nuclear Targets at the High Intensity Gamma-ray Source (HIGS)*"

**General Seminar. Institut Laue-Langevin, Grenoble, France** (Oct 2025), "*From permanent to induced neutron EDMs: what neutral beams on cryogenic targets reveal about fundamental symmetries and QCD.*"

**"Electric Dipole Moments: Experimental and Theoretical Horizons" invitation-only workshop. California Institute of Technology (Caltech)**, Pasadena, CA, and jointly organized by the T.D. Lee Institute, Shanghai. (May 2025) "*Neutron EDM with Superfluid $^4$He (and $^3$He) Experiment*"

**National Institute of Standards and Technology (NIST) Center for Neutron Research, Gaithersburg, MD.** (Mar 2024) "*Precision cryogenic experiments on the neutron lifetime, electric dipole moment, and electromagnetic polarizabilities*"

**University of Alabama in Huntsville, Department of Physics and Astronomy, "Frontiers in Science" seminar** (Oct 2023) (remote), "*Frontiers in Science: Experimental Nuclear Physics at Montclair State University*"

**European Centre for Theoretical studies in nuclear physics and related areas (ECT*) workshop on Neutron Electric Dipole Moment: From Theory to Experiment, Trento, Italy** (Aug 2022). "*The nEDM @ Spallation Neutron Source experiment: our novel approach and other physics reach*" https://www.youtube.com/watch?v=Q20dhGrJGUg

**Workshop on Very Cold and Ultra Cold Neutron Sources for European Spallation Source (HighNESS),** Lund, Sweden (held virtually) (Feb 2022). "*A Superfluid-Helium Super-thermal Ultracold Neutron Source Embedded in a Cylindrical, High Power Spallation Target*"

**Montclair State University seminar, NJ** (Feb 2020). "*To see a world in a grain of sand: what neutrons can tell us about the Universe*"

**Southeastern Section APS (SESAPS) meeting**, Wilmington, NC (Nov 2019). "*Search for time-reversal violation with the neutron electric dipole moment (nEDM) experiment at the Spallation Neutron Source*"

**Georgia Institute of Technology (GAtech) AMO seminar**, Atlanta, GA (Oct 2019). "*Ultracold neutrons and the search for time-reversal violation from a permanent neutron electric dipole moment*"

**International Fundamental Neutron Physics Summer School lecture**, Raleigh, NC (Jul 2018). "*Experimental overview of neutron electric dipole moment experiments*"

**University Tennessee Knoxville nuclear physics seminar,** Knoxville, TN (Apr 2018). "*Ultracold neutrons in electric dipole moment searches and magnetically trapped lifetime measurements*"

**COHERENT collaboration meeting external physics talk,** Duke University, NC (Jan 2018). "The *search for time-reversal violation with the neutron electric dipole moment at the Spallation Neutron Source*"

**Southeastern Section APS (SESAPS) meeting,** Georgia College, GA (Nov 2017). "*Search for time-reversal violation with the neutron electric dipole moment at the Spallation Neutron Source, ORNL*"

**APS Division Nuclear Physics meeting: mini-symposium overview,** Pittsburgh PA (Oct 2017). "*Instrumentation for Physics Beyond the Standard Model overview*"

**North Carolina State University: physics department colloquium,** Raleigh, NC (Apr 2017). "*Testing Fundamental Symmetries and Interactions with Ultracold Neutrons*"

**Johannes Gutenberg University of Mainz, Junior Professor search seminar**, Germany (Jun 2016). "*Studies of Low-Energy Fundamental Interactions with Ultracold Neutrons*". Position offered but declined.

**12th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2015).** Vail, CO (May 2015). "*The Neutron EDM Experiment at the Spallation Neutron Source (SNS nEDM)*"

**University of Kentucky: department seminar**, Lexington, KY (May 2015). "*Superfluid Helium Ultracold Neutron Sources and Magnetic Bottles for Neutron Lifetime Measurements at the Institut Laue-Langevin*"

**Institut Laue-Langevin: general seminar,** Grenoble, France (Sep 2013). "*The PULSTAR systematics test apparatus of the SNS nEDM experiment*"

**University of Auckland: department seminar**, Auckland, New Zealand. (Dec 2012). "*Production of ultracold neutrons and measurements of the neutron lifetime with magnetically trapped neutrons*"

**National Institute of Standards and Technology (NIST), Center for Neutron Research**, Gaithersburg, MD (Nov 2012). "*HOPE magnet trap for neutron lifetime and SUN2 superfluid helium source at ILL*"

**Next Generation Experiments to Measure the Neutron Lifetime Workshop**, Santa Fe, NM (Nov 2012). "*Progress towards neutron lifetime measurements with the HOPE magnetic UCN trap*"

**North Carolina State University: seminar**, Raleigh, NC (Sep 2011). "*SUN2: a new, versatile, helium-based UCN source. First UCN production results & Progress towards neutron lifetime measurements with the HOPE magnetic UCN trap*"

**Quantum Fluids and Solids: Neutrons and X-rays Studies workshop, Institut Laue-Langevin**, Grenoble, France. (Aug 2010). "*New source of Ultracold Neutrons (UCNs) from a superfluid $^4$He converter*"

**Technical University of Munich: E18 Department Seminar**, Garching, Germany (Mar 2010). "*Progress and future of neutron lifetime measurements with the HOPE magnetic UCN trap*"

## OTHER CONFERENCES, WORKSHOPS AND TALKS

**American Physical Society, Division of Nuclear Physics (DNP) Annual Fall Meeting.** Boston, MA (hosted by Massachusetts Institute of Technology). Contributed talk. "*Neutron electromagnetic polarizabilities with helium-3 nuclear Compton scattering.*" (Oct 2024)

**American Physical Society (APS) Mid-Atlantic Section annual meeting,** University of Delaware, Newark, DE. Contributed talk. "*Experimental Nuclear Physics in fundamental symmetries and low-energy QCD at Montclair State University*" (Nov 2023)

**International Workshop on Searches for the Neutron Electric Dipole Moment (nEDM2021),** "Les Houches" (virtual), France (Feb 2021). Talk: "*Cryogenic UCN storage, super-thermal production, and live spin analysis for measurements of static nEDMs, oscillating EDMs, and the neutron magnetic moment*"

**TUNL/Duke University summer REU seminar,** virtual (May 2020). Talk: "*To see a world in a grain of sand: what free neutrons can tell us about the Universe*"

**85$^{th}$ Annual Meeting of the APS Southeastern Section (SESAPS)**, Knoxville, TN (Oct 2018). Talk: "*Let there be light… and flux quanta: anticipating the first signals from nEDM@SNS*"

**International Workshop on Particle Physics at Neutron Sources.** Grenoble, France (May 2018). Selected to give talk on behalf of collaboration. Talk: "The search for a neutron EDM at the Spallation Neutron Source, ORNL"

**Fall Meeting of the APS Division of Nuclear Physics.** Vancouver, BC, Canada (Oct 2016). Talk: "*Measurement cells of the Spallation Neutron Source neutron Electric Dipole Moment experiment*." **Chaired session**: "*Mini-symposium on Instrumentation for Physics Beyond the Standard Model IB*"

**International SPIN Symposium 2016.** University of Illinois and Indiana University, Urbana-Champaign, IL (Sep 2016). Talk: "*PULSTAR systematics studies apparatus of the SNS nEDM experiment*"

**International Workshop: Probing Fundamental Symmetries and Interactions with UCN.** Johannes Gutenberg University of Mainz - Waldthausen Castle, Germany (Apr 2016). Talk: "*Measurement cells of the SNS nEDM experiment*" **Chaired session:** "*Decay correlations III and UCN-sources*"

**Light Detection in Noble Elements 2015 (LIDINE).** The University at Albany, State University of New York, Albany, NY (August 2015). Talk. "*Cryogenic, magnetic, RF, and ultra-cold neutron friendly measurement cells of the SNS nEDM experiment used for the detection of scintillations in superfluid helium*"

**Fall Meeting of the APS Division of Nuclear Physics.** Newport News, VA. (Oct 2013). Talk: "*The PULSTAR systematics studies apparatus of the SNS nEDM experiment*"

**Physics of Fundamental Symmetries and Interactions at Low Energies and the Precision Frontier.** Paul Scherrer Institut, Switzerland (Sep 2013). Poster: "*Development of a systematic studies apparatus at NC State for the nEDM collaboration*"

**8th International Workshop on Ultra-Cold & Cold Neutrons Physics & Sources.** Moscow - St. Petersburg, Russia (Jun 2011). Two talks: "*Progress towards neutron lifetime measurements with the HOPE magnetic UCN trap*" & "*SUN2: a new, versatile, helium-based UCN source: First UCN production results*"

**2010 International Symposium on Quantum Fluids and Solids (QFS2010) & associated Cryoconference.** World Trade Centre, Grenoble, France. (Aug 2010). Poster: "*SUN2: High-Intensity Source of Ultracold Neutrons from a Superfluid $^4$He Converter*"

**International Conference on Ultracold & Cold Neutrons Physics & Sources.** St. Petersburg, Russia. (Jun 2009). Talk: "*Neutron Lifetime measurements with the new Halbach Octupole Permanent (H.O.PE) magnetic trap*"

**1st EIROforum School of Instrumentation.** CERN, Switzerland (May 2009). Poster: *"A Permanent Octupole Magnetic UCN Trap for Neutron Lifetime measurements"*

**International Workshop on Particle Physics with Slow Neutrons.** Institut Laue-Langevin, Grenoble, France (May 2008). Poster: *"A permanent Octupole Magnetic UCN trap for Neutron Lifetime Measurements"*

## TEACHING EXPERIENCE

PHYS 191 University Physics I lecture & labs (Montclair: Fall 2021, Spring 2022, Fall 2022, Spring 2024, Spring 2025)

PHYS 192 University Physics II lecture & labs (Montclair: Spring 2026)

PHYS 230 Intermediate Physics Laboratory (Montclair: Fall 2022, Fall 2024, Fall 2026)

PHYS 330 Advanced Physics Laboratory (Montclair: Spring 2022, Spring 2024, Fall 2025)

PHYS 320 Thermal & Statistical Physics (Montclair: Spring 2025)

PHYS 198 Introductory Physics Seminar (Montclair: Spring 2023)

PHYS 300 Intermediate/Advanced Seminar (Montclair: Fall 2024)

Guest lectures on Neutron Physics module of PY506 Nuclear and Subatomic Physics for upper-undergrad/grad-elective (NCSU 2020, 2019, 2018 & 2015). Designed material and final exam questions.

Guest lectures on "momentum", PY211 college non-calculus based physics (NCSU 2018)

Guest lectures on "ideal gas law and kinetic theory", PY208 physics for engineers and scientists (NCSU 2017)

Guest lectures on Weak Interactions (2x), PY507 Elementary Particle Physics for upper-undergrad/grad-elective (NCSU 2016)

Mentored student in PY499 "Independent Study in Physics" credited course (NCSU 2016)

Mentored student to obtain a research grant from the Office of Undergraduate Research (NCSU 2015)

Certificate in Teaching Techniques for Postdoctoral Scholars (NCSU 2015) requiring 12-hours of courses on: Introduction to Teaching, Learning Styles, Effective Questioning, Evaluation and Grading, Collaborative Learning and Groupwork, and Establishing Authority and Credibility in the Class room.

Traveled and mentored 1st year PhD student to participate in a 1-week data-taking beam time at Los Alamos National Laboratory (NCSU 2015)

Guest lectured Physics 201 class—Introduction to Mechanics for Physics Majors (NCSU 2014)

Physics 201 class was evaluated by two senior faculty members: Paul Huffman and David Haase (NCSU 2014)

Workshop on: "Making the Most of Mentoring in Doctoral Education and Postdoctoral Life" and two-day "Advisor Academy workshop" (NCSU 2014-2015)

"Blockpraktika" (practical labs) teaching, 2x streams over 3 weeks, on the Franck-Hertz experiment (TUM 2010)

Installed and created instructions for new Earth's field NMR experiment for the Advanced Teaching Lab (UoA 2007)

Stage II & III (2nd & 3rd year) demonstrator, Advanced Nuclear & Quantum Teaching Laboratory (UoA 2005-2007)

Tutorials for the Physics for Life Sciences course (UoA 2007)

Private tutorials (for 4x groups of 4-5 students) for Physics for Life Sciences course (UoA 2007)

Stage I (1st year) Electrical Engineering Laboratory demonstrator (UoA 2007)

Stage I (1st year) Physics Teaching Laboratory demonstrator (UoA 2005-2007)

Tutor for the Stage I Physics Drop-in Help Room (UoA 2004-2005)

## MONTCLAIR STATE UNIVERSITY INTERNAL SERVICE

College of Science & Mathematics, **Founding Director of Machining and Fabrication (MacFab) Laboratory** (AY23-ongoing)

**University-wide AI Faculty Lead Group, convened by the Office for Faculty Excellence** (2026-ongoing)

**University-wide Syllabus Steering Committee** (AY25-26)

College of Science & Mathematics, **Search Committee for Associate Dean of Research and Partnerships** (AY24-25)

College of Science & Mathematics: Summer Accelerator Lab Tours 2025

**Cross-university Search Committee** for Sponsored Programs Administrator for Office of Sponsored Programs (AY23-24)

College of Science & Mathematics, **Research Task Force, direct report to the Dean**: AY23-24, AY24-25

College of Science & Mathematics/Department Open house & Accepted student days: ~ 11 events

Department Elections/Voting Committee: AY21-22, AY22-23, AY23-24, Chaired: AY24-25, AY25-26

Department Physics Club faculty advisor: AY21-22, chaired: AY22-23, AY23-24, AY24-25.

**Department Assessment committee** that **reports to the University Assessment Committee**: AY21-22, Chair: AY22-23, AY23-24, AY24-25. In AY23-24: from ground-up, revamped program learning goals and objects and implemented in the new Nuventive system. Our assessment (one of five departments) was **highlighted in the report to the Middle States Commission on Higher Education Accreditation**.

Department Elections/Voting Committee: AY21-22, AY22-23, AY23-24, Chair AY24-25 (successful chair-person election)

Department Awards & Scholarship Selection Committee: Chair AY24-25, AY25-26

Department Teaching Faculty Search Committee: AY25-26

## OTHER PROFESSIONAL SERVICE

Proposal Review Panelist for the **NSF Physics Section** (2026)

Proposal Reviewer for the **NSF Graduate Research Fellowship Program** (2022, 2025)

Proposal Reviewer for **Natural Sciences and Engineering Research Council of Canada** (NSERC) 2023

Proposal Reviewer for **Canada Foundation for Innovation (CFI)** 2023

Award Reviewer for **Oak Ridge Associated Universities Ralph E Powe Junior Faculty Award** (2020)

Peer-Review for ***European Physical Journal A*** (2021)

Peer-Review for ***Journal of Neutron Research*** *(2022)*

Peer-Review for ***Physical Review C: Nuclear Physics*** (2016)

Peer-Review for ***Reviews of Scientific Instruments*** (2016)

**Lead organizer** of the **Fundamental Neutron Physics Summer School** at NC State **(2018)**

**Annual Meeting of the APS Southeastern Section (SESAPS)**: student poster and talks judge (Oct 2018 & Nov 2019)

**Duke University/TUNL NSF Summer Research Experiences for Undergraduates (REU) selection committee** (2020 & 2021)

**Institut Laue-Langevin PhD student body representative:** elected to represent around 30 students to directors and management at the Institut Laue-Langevin, lab tours of foreign delegates and journalists (2008)

## EXTERNAL OUTREACH & SERVICE

**Founder & P.I. of Montclair State – Bergen Community College Nuclear Physics Research Internship Program.** External NSF grant (sole P.I.) funded. Hosted 7 Bergen students doing research alongside Montclair students. (2023, 2024, 2025)

**Bergen Community College** STEMC² Summer-research-close-out judge (Aug 2022, 2023, 2024, 2025, 2026) and Career panel speaker (Aug 2023, 2025)

**Essex County (Community) College talk** (Mar 2022) – "What neutrons can tell us about the Universe"

**High-school science fair lead judge** at the NC School of Science and Mathematics (ISEF-affiliated) science & engineering fairs (2015, 2016, 2020, 2021 virtual)

**Middle school talk** *"How nuclear reactions power the continents, the oceans, life and everything in between"*, Apex Friendship Middle School (May 2020) virtual talk

**Middle school talk** "Complex numbers and nuclear physics" Durham public schools' program to provide remote math courses (math 2) for advanced students (Jan 2020)

**NCSU Annual PhysicsPhest general public talk** *"To see a world in a grain of sand: what neutrons can tell us about the Universe"* (Nov 2019)

**Radioactivity and cloud chamber activity** for LEAP! (physics outreach for high-school girls) at NCSU (2017 & 2018)

**High- & middle-school summer camp programs:** created, organized, and ran outreach activities, involving NCSU's Society of Physics Students, to department lab tours and cloud chamber activity for NC School of Science & Math run Summer Accelerator program (2017 & 2019)

**Physics judge for North Carolina Student Academy of Science** (NCSAS) research competition (2017)

**Middle school & High School in-class demonstration lesson plan** developed and demonstrated for middle school and high school teachers for The Scientific Research and Education Network, SciREN (2016) (www.thesciren.org/lesson/watching-elements-change-through-nuclear-decay)

**PBS Newshour:** participated in the "STEM superstars" internet out-reach articles (2014) (www.pbs.org/newshour/extra/2014/04/the-stories-behind-22-stem-superstars)

**High-school lead judge** at the NC Central Regional Science & Engineering Fair and Academy of Science (2014)

**Skeptics in the Pub talk:** on The Big Bang model for the Auckland chapter of the society (2011)

**National newspaper article**: collaboration with journalist about my research (2009) (www.nzherald.co.nz/science/news/article.cfm?c_id=82&objectid=10590046 and www.odt.co.nz/lifestyle/magazine/going-nuclear)