CURRICULUM VITAE

NAME: Nora Berrah

NATIONALITY USA

ADDRESS: University of Connecticut
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Research lab/details website: https://tesla.phys.uconn.edu/

EDUCATION:

Ph.D. in Physics, May 1987, University of Virginia.
"Laser Photodetachment of HS^- Trapped in a Penning Trap"
Diplome d'Etudes Superieure (equivalent to Masters via courses) in Theoretical Physics**,** University of Bab Ezzouar, June 1979, Algiers, Algeria.

RESEARCH EXPERIENCE AND INTERESTS:

Investigation of quantum systems with state-of-the-art ultrafast lasers. Recent research interests are in the areas of ultrafast dynamics of small and extended quantum systems, non-linear physics, and time resolved studies of molecules with emphasis on long and short wavelength radiation, ultrafast time scales and strong laser fields. The current research involves the use of intense femtosecond and attosecond pulses from table-top lasers and free electron lasers (FEL) in the XUV, VUV and X-ray regimes to probe physical and chemical processes that happen on ultrafast time scales. This research impacts chemistry, biology, the environment, and technology.

PROFESSIONAL POSITIONS:

- UConn Board of Trustees Distinguished Professor, June 2024-present
- Professor, Physics Department, University of Connecticut, January 2014-present.
- Blaise Pascal Chair d'Excellence at Commissariat à l'énergie Atomique, CEA, Saclay, France, 2019-2025.
- Visiting Professor in attosecond research at the CEA, 2021-2025.
- Visiting Professor, Stanford University, and the PULSE Institute at SLAC National Labs, 2020.
- Professor and Head of the Physics Department, University of Connecticut, Jan 2014-August 2018.
- Chair d 'Excellence, SOLEIL (French National Synchrotron Laboratory), St. Aubin, France, 2011- 2012 and Visiting Professor, University Paris VI, Paris, France.
- Visiting Scientist, Stanford Linear Accelerator Center (SLAC), Stanford, CA, 2006.
- University Distinguished Faculty Scholar, Western Michigan University, 2000.
- Visiting Scientist, Lawrence Berkeley National Laboratory, Berkeley, CA, 1998-1999.
- Professor, Physics Department, Western Michigan University, August 1999.
- Associate Professor, Physics Department, Western Michigan University, August 1994.
- Visiting Scientist, Fritz-Haber-Institute der Max Planck Gesellschaft, Berlin, Germany, 1992-1993.
- Visiting Scientist (Chercheur Associe), LURE (Laboratoire pour l'Utilisation du Rayonnement Electronique), Orsay, France. June-July 1992, May 1993.
- Visiting Scientist, Physics Division, Argonne National Laboratory, Argonne, IL. May 1992.
- Assistant Professor, Physics Department, Western Michigan University, August 1991.
- Assistant Scientist, Physics Division, Argonne National Laboratory, October 1989-1991.
- Postdoctoral appointee, Physics Division, Argonne National Laboratory, May 1987-October 1989.
- University of Virginia, Physics Department: Graduate Research student in Atomic and Molecular Laser Spectroscopy, September 1980- May 1987; Teaching Assistant in Physics, 1982-1983.

PROFESSIONAL ASSOCIATIONS:

Fellow and member of the American Academy of Arts and Sciences
Fellow and member of the American Physical Society (APS) Division DAMOP.
Fellow and member of the American Association for the Advancement of Science (AAAS)
Member of the Division of Laser Science, APS.
Member of Phi Kappa Phi

AWARDS:

UConn Board of Trustees Distinguished Professor, June 2024

1. National Academy of Sciences, April 2024
2. Honorary Doctoral Degree in Physics from the University of Turku, Finland. September 10, 2021.
3. Blaise Pascal Chair d'Excellence, Ultrafast Science at Commissariat à l'énergie Atomique, CEA, Saclay, France, 2019-2025.
4. Excellent Research Achievement, College of Arts and Science, University of Connecticut, 2019.
5. Elected to the American Academy of Arts and Sciences, 2019.
6. Elected to the American Association for the Advancement of Science (AAAS), 2018. Citation: "For distinguished contributions to the field of molecular dynamics, particularly for pioneering non-linear science using x-rays free electron lasers and spectroscopy using synchrotron light sources"
7. 2014 Davisson-Germer Prize, American Physical Society (2014). Citation: "For pioneering experiments on the interaction of atoms, molecules, negative ions and clusters with ionizing vacuum ultraviolet and soft x-ray photons."
8. Western Michigan University, Arts and Science College, Global Engagement Award, 2012.
9. Western Michigan University (WMU) Dean's Faculty Research Appreciation Award, 2007, 2008.
10. David. S. Shirley Award for "Outstanding Scientific Achievements at the Advanced Light Source", Lawrence Berkeley National Laboratory, 2002.
11. WMU Distinguished Faculty Scholar Award, 2000.
12. Fellow, American Physical Society, 1999.
13. WMU President's Award for Excellence in Research, 1996.
14. WMU Dean's Award for Excellence in Research, 1995, 1997.
15. Humboldt Fellowship, Alexander von Humboldt Foundation, 1992-1993.
16. Graduate Fellowship, Physics Department, University of Virginia, 1985-1986.
17. Scholarship, University of Orsay, Paris, France, 1979-1980.
18. Scholarship, Ministere de L'Enseignement Superieure et de la Recherche Scientifique, Algeria, 1980-1985.
19. Algerian Baccalaureate exam with Honors, 1975 and French Baccalaureate, 1975, in Algeria.

MAJOR PROFESSIONAL ACTIVITIES:

Professional Society Service, Science Leadership and Advocacy, Planning and Evaluation:

1. Member, American Institute of Physics (AIP), Investment Advisory Committee (2018-2027)
2. Department of Energy Basic Research Need Workshop in Laser Technology Participant. August 2023.
3. APS, Task Force Member to Review APS Committees. 2022-2023.
4. APS, Board of Directors Member, 2019-2022
5. APS new England Councilor, 2019-2022
6. Chair, American Physical Society (APS) Nominating Committee 2020
7. Member of the fellowship committee of the American Academy of Arts and Sciences
8. Chair Elect, APS Nominating Committee (2019-2021)
9. Member, AAAS Council Delegate to the Section on Physics (2016-2018).
10. Leader, Department of Energy, BES, Round Table Discussion and Report Writing for the "Future Science with Next Generation LCLSII FELs". 2018.
11. Member, Instrument Advisory Panel for the construction of advanced instrumentation for LCLSII-x-ray FEL, SLAC National Laboratory, 2016-
12. Member, Proposal Review Panel (PRP**),** FERMI Free Electron laser facility, 2016-
13. Member, Davisson-Germer Prize Committee, American Physical Society, 2016
14. Member, Committee of Visitors (COV) Review Panel for the Scientific User Facilities Division within the DoE, Office of Science, Basic Energy Sciences, April 2016.
15. Chair, of the External Advisory Board (EAB), PULSE Ultrafast Center at SLAC National laboratory, 2015-

16. Member, European Union Network for Research & Innovation, HORIZON 2020; 2017-
17. Member, European Union Network for the "Marie Skłodowska- Curie Innovative Training Networks in attosecond science; MEDEA 2014-2019
17. Member, Office of Science, DOE, BESAC sub-committee for 2015 "Directing Matter and Energy: Challenges for Science and the Imagination" July-Dec 2014.
18. Member, BIOXFEL advisory board member, (NSF funded research labs) Buffalo, NY (2014-2019)
19. Member, BESAC sub-committee of DoE- Office of Science, for "Future X-ray Light Sources", 2013.
20. Member, American Physical Society Nominating Committee, 2013-2015.
21. Member, Science Advisory Committee, Advanced Light Source (ALS), Lawrence Berkeley National Laboratory (LBNL), 2007-2016
22. Member, Committee of Visitors (COV) Review Panel for the Scientific User Facilities Division within the DoE, Office of Science, Basic Energy Sciences, April 2013.
23. Member, Executive Committee, Division of Laser Science (DLS), APS, 2010-2013
24. Member, Users Executive Committee, Linac Coherent Light Source (LCLS), SLAC National Acceleratory Laboratory, 2012-2015.
25. Member, Basic Energy Sciences Advisory Committee (BESAC), Office of Science, Department of Energy, 2002-2012.
26. Member, Review Committee for the Physics Department, Uppsala University, Uppsala, Sweden, June 2011.
27. Member, Committee of Visitors (COV), Department of Energy Office of Science, AMO Physics, April 2011.
28. *Promoting Diversity;* Member, COACh Advisory Board for Gender Equity in STEM fields, 2009-.
29. Member, Advisory board, American-Algerian Foundation for Culture, Education, Science &Tech., 2010-2014.
30. Member, Division of Atomic, Molecular and Optical Physics (DAMOP), APS, Nominating Committee, 2008-2010.
31. Discussion Leader and Writer, DOE workshop on "New Era of Science: Solving Science and Energy Grand Challenges with Next-Generation Photon Sources" October 2008. Report published May 2009, National Academy Press.
32. Member, Review Committee, FOCUS NSF Laser Center, University of Michigan, 2007-2009.
33. Member, Review Committee, Department of Physical Chemistry, Pierre and Marie Curie University (Paris VI), Paris, France, January 2008.
34. Member, Science Advisory Committee, Stanford Synchrotron Radiation Light source (SSRL), SLAC National Accelerator Laboratory, 2006-2009.
35. Co-team leader for Atomic and Molecular Science, LCLS, SLAC National Accelerator Laboratory, 2004-2009.
36. *Promoting Diversity;* Co-Chair (with Arthur Bienenstock), "Strengthening the Physics Enterprise in Universities and National Laboratories through Gender Equity," Committee on the Status of Women in Physics (CSWP), APS, May 7-9, 2007.
37. *Promoting Diversity;* Chair, Committee of the Status of Women in Physics (CSWP), APS, 2007-2008.
38. *Promoting Diversity;* Member, Committee of the Status of Women in Physics (CSWP), APS, 2006-2008.
39. Chair, Davisson-Germer Prize Committee, American Physical Society, 2007.
40. Vice-Chair, Davisson-Germer Prize Committee, American Physical Society, 2005-2006.
41. *Promoting Diversity;* Member, Subcommittee of CSWP, Site visits to Physics Department, March 2005.
42. Member, Executive Committee, Division of Atomic Molecular and Optical Physics (DAMOP), American Physical Society, 2005-2008.
43. Member, Executive Committee, APS Topical Group on Few-Body Physics, 2006.
44. Member, Forum on International Physics (FIP), APS, 2006-2007.
45. Member, Science Advisory Committee for the LCLS, 4th Generation Light Source, SLAC, Stanford, CA, 2003-2005.
46. Member, Committee on Atomic, Molecular and Optical Physics, (CAMOS), National Research Council, 2000-2002.
47. Chair, Users Executive Committee, Advanced Light Source (ALS), Lawrence Berkeley National Laboratory, 2000.
48. Vice-Chair, Users Executive Committee of the Advanced Light Source (ALS), LBNL, 1999.
49. Member, Subcommittee to Review 4th Generation Light Sources, Basic Energy Sciences Advisory Committee (BESAC), Department of Energy, 1999.
50. Member, I. I. Rabi Prize Committee, American Physical Society, 1998-2000.

51. Member, Committee on International Scientific Affairs (CISA), American Physical Society, 1994-1997
52. Member, Executive Committee, Division of Atomic Molecular and Optical Physics, APS, 1995-1998.
53. Chair, Participation Research Team (PRT) of the Atomic & Molecular undulator beamline, 9.0.1/10.0.1 of the Advanced Light Source (ALS), LBNL, 1995-2004.
54. Member, Proposal Study Panel, ALS, LBNL, 1995-2000.
55. Member, Users Executive Committee, ALS, LBNL 1993-1996; 1997-2001.

Conference Organization and Leadership:

1. Chair, conference for undergraduate women and gender minorities in physics, January 2025.
2. Member, Local Organizing Committee for the ISWAMP ultrafast science satellite to ICPEAC, Quebec, Canada, 2021-2023
3. Member, International Program Committee for the ISWAMP ultrafast science satellite to ICPEAC, Quebec, Canada, 2021-2022.
4. Member, International Program Committee, ATTO conference, Orlando, Florida, July 5-9, 2021-2022
5. Member of the Institute for the Science of Light (ISL) School on ultrafast X-ray science, SACLAY, France.
6. Member of the red team for the ASU Compact FEL (2020-)
7. Co-Chair (with David Reis) on Non-Linear Multidimensional Methodologies for Studying Chemical Sciences with FELs. December 9-11, 2020.
8. Member, International Program Committee for the International workshop on advances on FEL science, September 2020.
9. Member, International Program Committee, International Conference on Many Particle Spectroscopy in Atoms, Molecules and Clusters (MPS) 2022 Turku, Finland.
10. Member, International Program Committee, International Conference on Many Particle Spectroscopy in Atoms, Molecules and Clusters (MPS) 2018 Budapest, Hungary.
11. Member, program committee for ICPEAC satellite (e,2e), 2016-2019
12. Member, Users Executive Committee, LCLS, SLAC, 2015-2018.
13. Member, LCLS II AMO instrument Advisory Meeting planning, 2016-2019.
14. Member, International Program Committee, International Conference on Many Particle Spectroscopy in Atoms, Molecules and Clusters (MPS) 2016, Moscow, Russia.
15. Member, International Committee, e,2e Conference (satellite of the International Conference on the Physics of Electronic and Atomic Collisions - ICPEAC), Spain, 2014-2015.
16. Consultant in Focus articles for APS: X rays Measure Lone Molecules, Physics 7, 22 (2014).
17. Member, International Program Committee, IWP&RIXS, Erice, Italy, August 2014
18. Member, International Program Committee, Gordon Research Conference on Photoions, Photoionization and Photodetachment, 2014, Galveston, TX.
19. Member, Program Committee, Gordon Research Conference on Multiphoton ionization, 2014, Boston.
20. Member, International Program Committee, International Conference on Many Particle Spectroscopy in Atoms, Molecules and Clusters (MPS) 2014, Metz, France.
21. Member, International Program Committee, International Workshop in Photoionization, Erice, Italy 2014.
22. Member, International Committee, e,2e Conference (satellite of the International Conference on the Physics of Electronic and Atomic Collisions - ICPEAC), Heifei, China, 2013.
23. Organizer, session on Physics with Ultrafast X-rays, Frontiers in Optics 2013/Laser Science XXVIII conference, Florida, 2013.
24. Organizer, session on Physics with Ultrafast X-rays, Frontiers in Optics 2012/Laser Science XXVIII conference, Rochester, NY, 2012.
25. Member, International Committee, Gordon Research Conference on Photoions, Photoionization and Photodetachment, 2012.
26. Member, International Committee, e,2e Conference (satellite of the International Conference on the Physics of Electronic and Atomic Collisions - ICPEAC), Belfast, Ireland, 2011.
27. Member, International Committee, Many Particle Spectroscopy Conference, Sendai, Japan, 2010-2014.
28. Co-Chair, Local Committee, International Conference on Photonic, Electronic and Atomic Collisions, ICPEAC XXVI, 2009.
29. Member, Executive Committee, International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), 2005-2009.
30. Member, Scientific Committee, International Conference on X-Ray and Inner-Shell Processes, 2005-2008.
31. Chair, First Summer School on Ultrafast Science using an X-ray Free Electron Laser (FEL), Pulse Center,

SLAC, June 2007.
32. Organized AMO sessions at FEL workshop in SRC, Wisconsin, October 2006
33. Co-Chair, Workshop at ALS users meeting, AMO science with vuv FEL, October 2006
34. Co-Chair, workshop at ALS users meeting, AMO science, October 2005
35. Member, Scientific Committee for the Advanced Photon Source Ultrafast X-ray workshop 8/2004
36. Member, Scientific Committee for the Ultrafast x-rays workshop, San Diego, CA, 4/2004.
37. Member, International Scientific Committee for the VUV14 International Conference, 2004.
38. Member, Program committee for the International ICPEAC satellite (e-2e/polarization) (2004)
39. Member, Program committee for the International ICPEAC satellite (e-2e/polarization) (2003)
40. Member, committee of the International Conference in X-Ray and Inner-Shell Processes, 1996-1999.
41. Member, sub-committee for the annual conference QELS '97, "Laser Spectroscopy, Laser Cooling, and Atom Trapping', 1997.
42. Member, International Scientific Committee, International Conference on the Physics of Electronic and Atomic Collisions (ICPEAC), 1995-1998.
43. Member, International Scientific Advisory Committee for the International Symposium on (e,2e) Double Photoionization and Related Processes, 1995-1997
44. Chair and Organizer, Session at the 1999 Optical Society of America (OSA) conference in San Jose, CA.
45. Chair and Organizer, AMO workshops at Advanced Light Source, ALS Users meeting, 1996&1997.
46. Member, Local organizing committee, "International Workshop in Photoionization" (IWP), Berlin, 1992.
47. Member, Local Organizing Committee, annual meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP), American Physical Society, Chicago, IL, 1992.
48. Member and Co-organizer, workshop on "Atomic Physics at the Advanced Photon Source," March, 1990, Argonne National Labs, Argonne, IL.
49. Chair of many sessions at the International Workshop on Photoionization (IWP), many sessions for the annual meeting of the Division of Atomic, Molecular, and Optical Physics (DAMOP), many workshops and sessions at ICPEAC, at X-ray conferences, and other national and international conferences.

Manuscript and Proposal Review:

Reviewer of many proposals for many agencies (NSF, DOE, NASA, CRDF, NRC, APS…Canada, France, Italy, UK, Germany, Sweden)
Manuscript reviewer for many physics journals (Nature, Science, Phys. Rev. Lett, Phys. Rev. A., J. Phys B, J. Chem. Phys, J. Elec. Spec, PCCP, J. Phys. Lett., J. Chem. Phys.…)

UNIVERSITY and PHYSICS DEPARTMENT SERVICE

At UConn 2014-
1. Head, Physics Department (2014-2018)
2. Member, Panel for the Graduate College workshop to mentor students, November 2014.
3. Member, WIMSE (women in math, Science and Engineering) Committee 2014-
4. Member, Search committee for Chemistry Department Head, 2016.
5. Member, Faculty Search committees
6. Member, Graduate admission committee
7. Member, PTR committee
8. Member, Head Advisory Committee

At WMU 1991-2013

1. Editor, Physics Department, Annual Research Report, 2010-
2. Member, WMU Presidential Search Advisory Committee, 2006-2007.
3. Member, Research Policy Council, 2003-2004, 2004-2007.
4. Member, Associate Dean Search Committee, College of Arts and Sciences, 2006
5. Member, Dean for International Studies search committee, WMU, 2006
6. Member, Vice President for Research search committee, WMU, 2005-2006.
7. Chair, Research Policy Council sub-committee on "Recognition at WMU", 2004.
8. Member, Arts and Sciences Women Caucus
9. Member, Future of the Physics Dept.

10. Member, University Academic Integrity Committee, 2001-2005.
11. Member, Graduate Committee Admissions, 1993-1996,'99-2012.
12. Member, WMU Curriculum Committee, 1996-1998.
13. Chair of the Facilities & Planning Committee, 1997-1998.
14. Chair, Colloquium of WMU Physics Department, 1992, 1996.
15. Member, Thesis Committees, PhD Comprehensive exams, Master thesis.
16. Chair, PhD. Thesis Committees, PhD committee member, PhD Comprehensive exams, Masterthesis, Undergraduate thesis.

Scholarly Activities:

PUBLICATIONS: 289 publications.
Citations: 10468; h-index: 52; i10-index 171 **(**Based on Google Scholar).

INVITED PRESENTATIONS: 277 Invited Presentations, including 175 invited presentations at national and international conferences and 104 seminars and colloquia.

CONTRIBUTED CONFERENCE ABSTRACTS: Over **700** national and international conference contributions.

Grants to conduct research from NSF and DoE: Over $10M

SCIENTFIC SERVICES: ~100 scientific activities, nationally and internationally.

PROMOTING SCIENCE LITERACY: Book for the general public**.** Marc. Humphrey, Paul V. Pancella and Nora Berrah, "Idiots Guides for Quantum Physics", ALPHA Books publishing, ISBN 97781615643172, Jan 6, 2015. Book translation version in French, " Physique Quantique: le guide de reference", 2019.

PROMOTING DIVERSITY: Contributes to inclusion and active recruitment of minorities to diversify the Scientific Workforce. Significant contribution in Outreach/Mentoring of women and other underrepresented groups (African American/Hispanics); Increase the number of minorities in physics and in STEM fields. Will chair the conference for undergraduate women in physics (CUWiP) in 2025 at UConn. Contribution to this effort started 30 years ago. See pages 42-43.

BRIEF SUMMARY OF RESEARCH INTERESTS:

The research focuses on investigating ultrafast quantum phenomena induced by the interaction of systems with photons produced by table-top lasers and light sources. In particular, the research examines photo-induced dynamics from quantum systems (molecules, water droplets, clusters) and probes the dynamics of excited states to understand energy and charge transfer in systems. Additionally, we focus on the areas of non-linear physics. The experiments are paired with theories to understand, in real time, molecular transformation using long and short wavelength radiation, and strong laser fields. The current research involves the use of intense table-top femtosecond and attosecond lasers pulses at the UConn lab and at the CEA at SACLAY, France respectively. In addition, we use national and international free electron lasers (FELs) facilities in the XUV, VUV and X-ray regimes to understand the coupling of electronic and nuclear processes in matter that happen on ultrafast time scales.

The research activities encompass: 1) Fundamental interactions between ultrafast FELs photons and molecular systems to advance quantitative understanding of electron correlations, charge transfer and proton transfer. The research focuses on probing, on femtosecond and attosecond time-scales, multi-electron interactions, in order to understand and control, energy transfer, charge migration, from laser radiation to quantum system/matter. The FELs used so far are in the US (LCLS), Japan (SACLA), Germany (XFEL and FLASH) and Italy (FERMI). 2) Investigating ring opening, particularly 2-bromothiophene, as a function of UV wavelength excitation, probed with ultrafast electron diffraction (UED) at SLAC National

Lab.

3) Isomerization phenomena such as single and double H-migration as well as roaming mechanisms using my UConn lab. 4) High resolution, inner-shell excitation and ionization in molecules and clusters with lasers and X-ray synchrotron radiation facilities at Lawrence Berkeley National Lab in CA as well as at international facilities in France and Germany.

PUBLICATION LIST

1. Nora Berrah, James Cryan, River Robles, Taran Driver, Agostino Marinelli, and Philip Bucksbaum, "Attosecond X-ray Sources, Methods, and Applications at Present and Future Free Electron Lasers: a tutorial (Under review with **Advances in Optics and Photonics**).

2. Oliver Alexander, Felix Egun, Laura Rego, Ana Martinez Gutierrez, Douglas Garratt, Gustavo Adolfo Cardenes, Juan J. Nogueira, Jacob P. Le, Kaixiang Zhao1, Ru-Pan Wang, David Ayuso, Jonathan C. T. Barnard, Sandra Beauvarlet, Philip H. 5 Bucksbaum, David Cesar, Ryan Coffee, Joseph Duris, Leszek J. Frasinski, Nils Huse, Katarzyna M. Kowalczyk, Kirk A. Larsen, Mary Matthews, Shaul Mukamel, Jordan T. O'Neal, Thomas Penfold, Emily Thierstein, John W. G. Tisch, James R. Turner, Josh Vogwell, Taran Driver, Nora Berrah, Ming-Fu Lin, Georgi L. Dakovski, Stefan P. Moeller, James P. Cryan, Agostino Marinelli, Antonio Picón Jonathan P. Marangos, "Attosecond Impulsive Stimulated X-ray Raman Scattering in Liquid Water" **Science Advances** 25 ep 2024Vol 10, Issue 39 DOI: 10.1126/sciadv.adp0841.

3. Kurtis Borne, Jordan O'Neal, Jun Wang, Erik Isele, Razib Obaid, Nora Berrah, Xinxin Cheng, Philip Bucksbaum, Justin James, Andrei Kamalov, Kirk Larsen, Xiang Li, M. Lin, Yusong Liu, Agostino Marinelli, Adam Summers, Emily Thierstein, Thomas Wolf, Daniel Rolles, Peter Walter, James Cryan, and Taran Driver. "Design and Performance of a Magnetic Bottle Electron Spectrometer for High-Energy Photoelectron Spectroscopy" **Rev. Sci. Instrum**. 95, 125110 (2024). (https://doi.org/10.1063/5.0223334 DOI: 10.1063/5.0223334

4. Debadarshini Mishra*, Aaron C. LaForge*, Sergio Diaz-Tendero, Fernando Martin, and Nora Berrah "Direct visualization of an elusive molecular reaction: Time-resolved H_2 roaming in acetonitrile", **Nature com 15**, 6656 (2024) (2024) https://doi.org/10.1038/s41467-024-49671-6

5. A. C. LaForge*, D. Mishra*, U. Saalmann, R. Obaid, S. Pathak, H. Lindenblatt, S. Meister, F. Trost, P. Rosenberger, R. Michiels, S. Biswas, K. Saraswathula, F. Stienkemeier, F. Calegari, M. Braune, M.Mudrich,M. F. Kling, D. Rolles, E. Kukk, T. Pfeifer, Jan M. Rost, R. Moshammer, and N. Berrah, "Fragmentation dynamics of fullerenes upon extreme electronic excitation near the giant resonance with XUV free-electron laser pulses" (Under review with **Phys. Rev. Lett**.)

6. Driver, Taran, Miles Mountney, Jun Wang, Lisa Ortmann, Andre Al-Haddad, Nora Berrah, Christoph Bostedt, Elio Champenois, Louis DiMauro, Joseph Duris, Douglas Garratt, James Glownia, Zhaoheng Guo, Daniel Haxton, Erik Isele, Igor Ivanov, Jiabao Ji, Andrei Kamalov, Siqi Li, Ming-Fu Lin, Jon Marangos, Razib Obaid, Jordan O'Neal, Philipp Rosenberger, Niranjan Shivaram, Anna Wang, Peter Walter, Thomas Wolf, Hans Jakob Wörner, Zhen Zhang, Philip Bucksbaum, Matthias Kling, Alexandra Landsman, Robert Lucchese, Agapi Emmanouilidou, Agostino Marinelli, and James Cryan. "Attosecond Delays in X-Ray Molecular Ionization", **Nature**, 632 (August 21, 2024): 782-67. https://doi.org/10.1038/s41586-024-07771-9.

7. Zhaoheng Guo, Taran Driver, Sandra Beauvarlet, David Cesar, Joseph Duris, Paris L. Franz, Oliver Alexander, Dorian Bohler, Christoph Bostedt, Vitali Averbukh, Xinxin Cheng, Louis F. DiMauro, Gilles Doumy, Ruaridh, Forbes, Oliver Gessner, James M. Glownia, Erik Isele1, Andrei Kamalov, Kirk A. Larsen, Siqi Li, Xiang Li1, Ming-Fu Lin, Gregory A. McCracken, Razib Obaid, Jordan T. O'Neal, River R. Robles, Daniel Rolles, Marco Ruberti, Artem Rudenko, Daniel S. Slaughter, Nicholas S. Sudar, Emily Thierstein, Daniel Tuthill, Kiyoshi Ueda, Enliang Wang, Anna L. Wang, Jun Wang, Thorsten Weber, Thomas J. A. Wolf, Linda Young, Zhen Zhang, Philip H. Bucksbaum, Jon P. Marangos, Matthias F. Kling, Zhirong Huang, Peter Walter, Ludger Inhester, Nora Berrah, James P. Cryan, and Agostino Marinelli, "Experimental Demonstration of Attosecond Pump-Probe Spectroscopy with an X-ray Free-Electron Laser" Nature Photonics, **Nature Photonics**, **18**, 691–697 (2024) 18ISSN 1749-4885 DOI: https://doi.org/10.1038/s41566-024-01419-w · OSTI ID:2340110

8. E. Wang, N. G. Kling, A. C. LaForge, R. Obaid, S. Pathak, S. Bhattacharyya, S. Meister, F. Trost, H. Lindenblatt, P. Schoch, M. Kubel, A. Rudenko, T. Pfeifer, S. Dıaz-Tendero, F. Martin, R. Moshammer, D. Rolles, and N. Berrah, "Probing ultrafast roaming mechanisms in ethanol: electron transfer versus proton transfer", **J. Phys. Chem. Lett**. 14, (18), 4372–4380 (2023).

9. Niels Breckwoldt, Sang-Kil Son, Tommaso Mazza, Aljoscha Rörig, Rebecca Boll, Michael Meyer, Aaron C. LaForge, Debadarshini Mishra, Nora Berrah, and Robin Santra, "Machine-learning calibration of intense x-ray free-electron-laser pulses using Bayesian 2 optimization" **Phys. Rev. Research 5**, 023114 22 May (2023). DOI: 10.1103/PhysRevResearch.5.023114

10. A. R. Abid, S. Bhattacharyya, A. S. Venkatachalam, S. Pathak, K. Chen, H. Van Sa Lam, K. Borne[1], D. Mishra, R C. Bilodeau, I. Dumitriu, A. Rudenko, N. Berrah, M. Patanen, D. Rolles, "Hydrogen migration in inner-shell ionized halogenated cyclic hydrocarbons" **Scientific Reports, 13**, 2107 (2023). https://doi.org/10.1038/s41598-023-28694-x

11. C. LaForge, J. D. Asmussen, B. Bastian, M. Bonanomi,C. Callegari, S. De, M. Di Fraia, L. Gorman, S. Hartweg, S. R. Krishnan, M. Kling, D. Mishra, S. Mondal, A.Ngai, N. Pal, O. Plekan, K. C. Prince, P. Rosenberger, E. Serrata, F. Stienkemeier, N. Berrah, and M. Mudrich, "Relaxation dynamics in excited helium nanodroplets probed with high resolution, time-resolved photoelectron spectroscopy" PCCP **24**, 28844(2022).

12. N. Berrah, "Probing C_{60} Fullerenes From Within Using Free Electron Lasers", Atoms, **10**, 75 (2022). https://doi.org/10.3390/atoms 10030075.

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INVITED PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES

1. "Extreme electronic excitation near the giant resonance of C_{60} with XUV FEL pulses", international conference, 13th International Workshop on Photoionization (IWP) and Resonant Inelastic X-ray Scattering (RIXS), Ascona Switzerland, July 21-26, 2024.

2. "FEL-based research ", 2024 Ultrafast X ray Summer School, SLAC, CA, June 2024

3. "Molecular dynamics using ultrafast FELs", 2024 Ultrafast X ray Summer School, SLAC, CA, June 2024

4. "Negotiation skills as a junior scientist", Seminar, Oceanic society, MPOWIR Pattullo Conference, September 26, 2023

5. "Time-Resolved Ultrafast Molecular Dynamics using Pump-Probe Techniques with Femtosecond IR or Attosecond X-ray FEL Pulses", International ATTO 9 Conference, Jeju, Korea, July 9-14, 2023.

6. "Ultrafast Molecular Dynamics at the Attosecond and Femtosecond Timescale", ISWAMP, International satellite of 2023 ICPEAC in Montreal, Canada, July 22, 2023.

7. "Molecular dynamics imaging from within at the fs and at timescale using FELs", Invited presentation at the AMOS meeting, DoE, BES, October 24, 2022.

8. " A resonant Bond breaking Experience with C_{60}", FLASH review of Beamline 26, October 5, 2022, Hamburg, Germany (online)

9. "From Atoms to Fullerenes: Non-linear physics using FELs", Mini-Symposium on FEL science at Imperial College London, July 1, 2022.

10. "Probing Molecular Dynamics in Real Time from Within with Free Electron Lasers", Many Particle System (MPS) International Conference, Turku, Finland June 15, 2022.

11. "Molecular dynamics with FELs", international Atto-FEL conference, London, UK, June 27-30, 2022.

12. "Probing Molecular Dynamics in Real Time from Within with Free Electron Lasers", PACIFCHEM, 2021 International Chemical Congress of Pacific Basin Societies. December 18, 2021. (online)

13. "Probing Molecular Dynamics in Real Time from Within with Free Electron Lasers", GDR Ultrafast Phenomena, Paris, France, 22-23 November 2021

14. "Probing Molecular Dynamics in Real Time from Within with Free Electron Lasers", 33 Max IV users meeting, Lund, Sweden, Oct 28, 2021.

15. "Time-resolved FELs studies of He-droplets", 32nd International Conference on Photonic, Electronic and Atomic Collisions; e-ICPEAC conference, July 21, 2021 (virtual) (given by my postdoc A. LaForge).

16. "Time-resolved molecular dynamics", DAMOP 2021, May 31-June 4, 2021 (virtual) (given by my postdoc A. LaForge).

17. "Attosecond Electron Dynamics in Molecules using Non-Linear Multidimensional Methodologies with FELs" International Workshop on "Attosecond to Few-Femtosecond Ultrafast Science at Future FELs" (AsToFewFs@FutureFELs) EU FEL, Hamburg, Germany, June 28-30, 2021 (Online).

18. "Science Opportunities with ultrafast X-ray lasers", Beckman Foundation Instrumentation Opportunities

workshop, April 28, 2021.Online

19. "Catching Conical Intersections in the Act", WavemiX conference, Switzerland, January 14, 2021. Online

20. "Probing C_{60} Dynamics in Real Time from Within with Free Electron Lasers", AAMOS20: Advances in Atomic, Molecular, and Optical Sciences, December 16 2020 (Virtual)

21. "Time-resolved dynamics using X-ray FELs", OSA Frontiers in Optics conference, Virtual, September 16, 2020 (Virtual)

22. "Science with high rep rate and coherences with FELs", 2nd Forum on Advanced FEL Techniques, virtual, Hamburg, Germany, September 15-16, 2020. (Virtual).

23. "Visualizing Photon-Induced Dynamics in Polyatomic Molecules using Femtosecond Pump-Probe Laser Pulses", AMOS Meeting, Gaithersburg, MD, October 28-30, 2019.

24. "Ultrafast Molecular Dynamics": Toward Making the Molecular Movie", ASPIRE European Network Meeting, Berlin, Germany, September 23-25, 2019.

25. "Time-resolved Molecular Dynamics", 5th International Symposium on Intense Field, Short Wavelength, Atomic & Molecular Processes (ISWAMP), July 20-22, 2019.

26. "Towards Making Molecular Movies,"Workshop on "New Trends in Atomic Physics", Steinbach (Frankfurt), Germany, May 9-12, 2019.

27. "Investigating dynamics with soft x-ray FELs", Workshop on New Scientific capabilities at European XFEL", March 25-27, 2019, DESY, Hamburg, Germany.

28. "The molecular Movie: X-ray Laser Science - A New Frontier, American Physical Society, Physics Next Workshop", APS headquarters, Long Island, N. Y. April 22-24, 2019.

29. First experiments with LCLS-II", LCLS Users Meeting, SLAC, CA, September 27, 2018.

30. "Fullerenes ionization with FELs", Cosmic Fullerenes workshop, Orsay, Paris, France, September 21, 2018

31. "C_{60} femtosecond dynamics induced by the LCLS x-ray FEL", Many Particle System (MPS) International Conference, Budapest, Hungary, August 2018.

32. "Probing Time-Resolved Molecular Dynamics from Within", Division of Atomic, Molecular and Optical Physics (DAMOP), Fort Lauderdale, Florida, June 1, 2018.

33. "Probing Reactive and Transient Species", Gordon Research Conference in Photoionization and Photodetachment, Galveston, TX, February 18, 2018.

34. "AMO Science with Beamline 10", ALS Users Meeting, October 4th, 2017.

35. "Negotiation Skills for Junior Scientists", International ASPIRE network meeting, Abbaye des Vaux de Cernay, France, September 11, 2017.

36. AMO science with FELs and Synchrotrons", International ASPIRE network meeting, SOLEIL Synchrotron radiation facility, Paris, France, September 12, 2017.

37. "Time resolved C_{60} femtosecond dynamics induced by high intensity x-rays from the LCLS", (2,2e) international ICPEAC satellite, August 1, 2017.

38. "Time resolved molecular dynamics with FEL" Frontiers in Theoretical and Applied Physics, AUS, Emirate Arab Emirates, February 22-25, 2017.

39. "Molecular Dynamics with Fullerenes", Ultrafast dynamics with intense radiation sources Summer school, MEDEA Marie Skłodowska-Curie EU Network, Crete, Greece, October 19, 2016

40. "Probing complexity using the ALS and LCLS", AMOS meeting, Washington DC, October 26, 2016.

41. Ultrafast Science, VUVX satellite in Hungry, June 2016 (Given by my postdoc N. Kling due to schedule conflict)

42. "Probing fullerenes with FELs and IR", FEL Summer school, SLAC National Laboratory, Stanford, June 14, 2016.

43. "Probing fullerenes from within using femtosecond light sources", Plenary talk, DPG Annual meeting, Hannover, Germany, March 2016.

44. "Investigating fullerenes with FELs and IR lasers", GRC in Photoionization and photodetachment conference, Lucca, Barga, Italy, February, 2016

45. " Physics with FELs", Winter School for The Marie Curie network, Milan, January, 2016

46. "Non-Linear physics with fullerenes", Symposium SLAC National laboratory, September 16, 2015.

47. "Probing fullerenes from within using FELs", Nobel symposium, Stigtuna, Stockholm, Sweden, June 15, 2015.

48. "Photoionization of C_{60} using the LCLS", International Conference IWP/RIXS, Erice, Italy, August 2014.

49. "Probing complexity from within using XFELs", Plenary presentation in Prize Session for Davisson-Germer Award) at the 2014 Division of AMO Physics (DAMOP) conference, Madison, WE, June 2014.

50. "Science with FELs", Gordon Conference on Multiphoton Ionization, Boston, June 2014.

51. "Probing C_{60} dynamics using the LCLS", FEL Attosecond International conference, U-College London (UCL), June 30, 2014.

52. "Ultrafast phenomena with FELs", XCLIC conference, UCL, London, July 3-4, 2014.

53. Molecular dynamics with FELs", Faraday Discussion Conference, Sheffield, UK, July 8-11, 2014.

54. " Probing C_{60} from within using the LCLS" Many Particle Science (MPS) 2014, Metz, France, July 15-18, 2014.

55. "Investigating extended systems with FELs" GRC in Photoionziation and Photodetachment in Galveston, TX, February 24, 2014.

56. "Probing complexity using the LCLS and the ALS", DOE AMOS workshop, October 27-30, 2013.

57. "Probing Dynamics using FELs", LCLS annual users meeting, SLAC National Laboratory, October 1-4 2013.

58. "Investigating dynamics with FELs", Plenary talk at the 17th International Symposium on Polarization and Correlation in Electronic and Atomic Collisions, July 31-August 3, 2013.

59. "Investigating Molecular and Clusters Physics with Ultrasfast and Ulraintense photons", Invited talk at the 38th International Conference on VUV-X ray Physics, Hefei, China, July 12-18, 2013.

60. "Investigating Dynamics in C_{60}", ISWAMP-2, ICPEAC satellite, Xi'an, China, 2013.

61. "Physics with ultrafast X-FEL", Invited lecture at the Ultrafast X-ray Summer School (UXSS), June 11-14, 2013, DESY, Hamburg, Germany.

62. "Cross cutting review in AMO and Dynamics", Workshop at the Advanced Light Source, April 4, 2013.

63. "Career in the STEM fields", COACh workshop at the Tunis University, Tunisia, March 11-13, 2013.

64. "Collaboration in the STEM fields", COACh workshop in Casablanca, Morocco, March 6-8, 2013

65. "Career in the STEM fields", COACh workshop in Algiers, University of Algiers, USTHB Algeria, January 21-24, 2013

66. "Sequential investigation of double core holes with intense FEL pulses", Multiphoton processes Gordon Conference, Mount Holyoke College, South Hadley, MA June 2012. Given by Li Fang my postdoc."Multiphoton X-ray Dynamics in Atoms and Molecules" XXIX Frontiers in Optics/ Laser Science (FIO/LS) 2012, LTu5H.2, Rochester, NY October 2012. Given by B. Murphy, my postdoc.

67. "Probing matter from within using x-ray free electron lasers", Conference for Undergraduate Women in Physical Sciences (WoPhyS'12) at the University of Nebraska in Lincoln, October 2012.

68. "Molecular Physics with X-FEL" Plenary talk, 2012 EGAS conference, European Group on Atomic Systems, Goteborg (Sweden), July 9-13, 2012.

69. "Probing matter with FELs", ICTP, Trieste, Italy, March 28, 2013.

70. "Ultrafast Molecular physics with FELs", Gordon conference on Photoions, photoionization and photodetechment, Galveston, TX, February 12-17, 2012.

71. "Probing Fundamental Processes Related to Plasmas Physics using the LCLS X-ray FEL", Workshop in Paris VI, "2012 Journee Plasmas/Plasma Day", January 18, 2012, Paris, France

72. "Probing Molecules from Within with the ultra-intense and ultra-fast LCLS, XFEL", International Workshop on ATOMIC PHYSICS, November 21 - 25, 2011, Dresden, Germany.

73. "Probing Molecules from Within with the ultra-intense and ultra-fast LCLS, XFEL", International workshop v-FAMC 2011, New Frontiers in Atomic, Molecular and Cluster Physics and Chemistry, Trieste, November 14-15, 2011, Italy

74. "Probing Molecules from Within with the ultra-intense and ultra-fast LCLS, XFEL", EMMI workshop on Non-Linear Dynamics of Simple Quantum Systems at Extreme Temperature and Intensities", Darmstadt, Germany October 31, (2011).

75. "Scientific Opportunities with X-FELs", Finnish synchrotron users meeting, Campere, Finland, Oct 24, 2011.

76. "Probing the Evolution of the Interaction of Molecules with the LCLS X-ray FEL" 2011 X-ray Science Research Gordon Conference, Maine, August 8, 2011.

77. X-Ray FEL Induced Multiple Ionization and Double Core-Hole Production, International conference in photonic, electronic and atomic collisions, ICPEAC XXVII, Belfast, UK, July 28, 2011.

78. Intense FEL-Molecules Physics: Highly charged ions, 17th international conference on atomics processes in plasma, APiP, Belfast,UK, July 20, 2011.

79. "FEL sources Physics", Jefferson-Lab users meeting, New-Port News, VA, June 6, 2011

80. "First Experiments using the LCLS free electron laser", CLEO conference, Maryland, May 1, 2011

81. Non-linear processes in the molecules using the world first x-ray FEL, Graduate fellowship research meeting, ANL August 2010. Given by L. Fang my postdoc.

82. "Ultraintense X-Ray Induced Multiple Ionization and Double Core-Hole Production in Molecules", Annual German Physical Society, DPG Spring Meeting, March 13-18, Dresden, 2010, Germany.

83. "Observation of Multiphoton Physics: First Experiments using the LCLS X-Ray FEL", International Conference on Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces (MPS2010, September 4-7, 2010, Sendai, Japan.

84. "X-ray Induced Multiple-Ionization, Dissociation and Frustrated Absorption in Diatomic Molecules", X- ray Science in the 21st Century, The Kavli Institute for Theoretical Physics (KITP), UC Santa Barbara, August 2-6, 2010."First Results on Ultra-Fast and Ultra-Intense Studies on Molecular Photoabsorption using the LCLS X- Ray FEL", 2010 Multiphoton Processes Gordon Conference, June 6-11, 2010.

85. "First Results on Ultra-Fast and Ultra-Intense Studies on Molecular Photoabsorption using the LCLS X-Ray FEL", Division of Atomic, Molecular and Optical Physics (DAMOP), May 25-29, 2010, Houston, TX.

86. "First Results on Ultrafast and Ultraintense X-Ray Studies of Molecular Photoabsorption using the LCLS Free Electron Laser", International Workshop on Science with FELs – from first results to future perspectives, March 14-17, 2010, Ringberg, Germany.

87. "Gender Equity Status in the US and around the world", APS spring Meeting, Wahsington DC, February 2010

88. "Overview on Photoionization" 2010 GRC on Photoions, Photoionization & Photodetachment, Galveston, TX, January 31 – February 5, 2010.

89. "First experiment at the LCLS", DOE, BES, Basic Energy Science Advisory Committee, Washington DC, November 2009

90. Three-Body Fragmentation of CO_2^{+2} upon K-shell Photoionization", International Conference on Photonic, Electronic and Atomic Collisions, ICPEAC 2009, MI, July 22, 2009 Given by Ileana Dumitriu (Special Report).

91. "Molecular-frame angular distribution of normal and resonant Auger electrons" (e,2e) ICPEAC satellite, Lexington, July 28, 2009 (Given by D. Rolles).

92. "First Experiments at the LCLS', BESAC meeting, November 2009.

93. "New generation light source", Workshop, BESAC, DoE, February 25-27, 2009

94. "Non-linear studies of molecules", Planning experiment workshop at the LCLS, March 2009.

95. "First molecular experiment using the LCLS" Workshop at the LCLS users meeting, October 2009.

96. "Atomic, molecular, cluster and chemical science with theLCLS", Workshop at the LCLS users meeting, October 2008.

97. "Probing Matter from Within", Nordic Conference in Physics (NorWIP), Uppsala, Sweden, 9/08

98. "Imaging Clusters and Molecules", International Workshop in Photoionizatipon, Uppsala, Sweden, July 15-20, 2008 (will be given by D. Rolles)

99. "Probing Cluster from Within with the ALS", International Conference in X-Ray Processes, Paris, France,

June 22-27, 2008

100. "Gender equity in Physics", 2008 APS April Meeting, St Louis, MO, April 14, 2008

101. " Resonances in Atoms", Atomic Physics Symposium at Notre Dame University, April 4-5, 2008.

101. "Atomic, Molecular and Cluster Physics using Future Light Sources, Workshop on 4th Generation Light Sources, Baton Rouge, Louisiana, January 28, 2008.

102. " Future Light Sources", Workshop on 4th Generation Light Sources, Berkeley, CA, October 2007.

103. "Size Effects in Angle-Resolved Photoelectron Spectroscopy of Free Rare Gas Clusters", 15th International Conferences on Vacuum Ultraviolet radiation 2007, VUV XV, Berlin, Germany, July 29, August 3rd, 2007 (given by D. Rolles)

104. "Size Effects in van-der-Waals Clusters: Spin, Angle-Resolved and Imaging Studies ", International Conference on Photonic, Electronic and Atomic Collisions, ICPEAC 07, Freiburg, July 25-31, Germany (given by postdoc D. Rolles)

105. "Studies of molecules using a velocity map imaging detector", International Conference on the Application of Accelerators in Research and Industry, Denton, Texas; November 2006 (given by Z. Pesic)

106. "Probing molecules and clusters using the ALS" International Atomic Workshop, Dresden, Germany, November 28, 2006.

107. "Impact of AMO science using FEL: Atmospheric and Intergalactic Gases" Introduction to organized AMO session at the SRC FEL workshop, Madison, WI, October 18-19, 2006 (talk given by R, Bilodeau, postdoc)

108. "Opportunities for Future AMO Science at the ALS with FELs", Prospects for Studies of Exotic, Transient, and Ultradilute Gas-Phase Targets ALS AMO workshop, ALS, LBNL, October 9-10, 2006

109. "Angle-Resolved photoelectron Spectroscopy of van der Waals clusters"ICESS satellite on Molecular Frangmentation, Rio, Brazil, September 4-6, (given by posdoc D. Rolles)

110. "AMO Physics using the ALS Slicing Source" Advanced Light Source workshop, July 24, 2006

111. "Gas-Phase and Cluster Science using FELs" Workshop on X-Ray Free-Electron Lasers: Challenges for Theory, ITAMP, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, June 19-21, 2006

112. Probing Dynamics from Within in Negative Ions, Neutral Molecules and van der Waals Clusters", Division of the Atomic, Molecular, and Optical Physics of APS, DAMOP, May 18, 2006

113. "Discussion on Inner-Shell Photoionization", 4th Gordon Conference on Photoions, Photoionziation and Photodetachment, Introduction to Photoionization Session, Buellton, CA, January 29-February 3, 2006.

114. "Studies of Complex Systems from Within using Photoelectron Spectroscopy", "US-Africa Advanced Studies Institute: Photon Interactions with Atoms and Molecules", Durban, South Africa, Nov. 03-12, 2005.

115. "Probing Dynamics and Structure in Atoms, Molecules and Negative Ions using the ALS", "US-Africa Advanced Studies Institute: Photon Interactions with Atoms and Molecules", Durban, South Africa, Nov. 03-12, 2005.

116. "Recommendations to use SESAME, the Synchrotron Source in the Middle-East", Conference on Mediterranee: Le partage du Savoir, organized by the French Association for the Advancement of Sciences", Casablaca, Morocco, September 6, 2005.

117. "Women in Sciences"Conference on Mediterranee: Le partage du Savoir organized by the French Association for the Advancement of Sciences", Casablaca, Morocco, September 5, 2005.

118. "Probing Strong Electron Correlations in Negative Ions", International Workshop in Photoionization 2005 (IWP 05), Campinas, Brazil, July 31, 2005.

119. "Double Auger decay, Feshbach and shape resonances in negative ions", X05, Melbourne, Australia July 2005.

120. "Photoionization of molecule" IWP 05, Campinas, Brazil, Given by Daniel Rolles."Inner-shell excitation of van der Waals clusters, International Symposium on (e,2e) Collisions, Double Photoionization and Related Processes, Buenos Aires, Argentina, July25-27, 2005. Given by John Bozek,

121. "Photoionization of Clusters", Division of Atomic, Molecular and Optical Physics (DAMOP), May 2005; given by John Bozek,

122. "Inner-Shell photodetachment of negative ions" International Symposium on (e,2e) Collisions, Double Photoionization and Related Processes, Buenos Aires, Argentina, July25-27, 2005 Given by Rene Bilodeau.

123. "Future AMOS research at the LCLS, Workshop on Ultrafast Soft X-Ray Science at LCLS, Stanford, CA, June 27-28, 2005.

124. "Photoionization of Ions", Einstein Photoeffect Symposium, General DPG meeting, Berlin, Germany, March 4, 2005.

125. "Atomic and Molecular Physics", DOE, BES Review of the ALS-LBNL, February 3, 2005.

127."AMOS science at the LCLS", workshop at SLAC, Stanford, October 25-26, 2004.

128. "Probing Dynamics and Structure using the ALS", DOE contractors meeting, Warrenton, VA, September 13 2004.

129. "Inner-Shell Double Photodetachment of Negative Ions", Workshop on Time-Domaine Science using X-Ray Techniques (APS future direction workshops), Abey on lake Geneva, August 30, (2004)

130. "Double Photodetachment of He^-: Feshback Resonances and Triply Excited Resonances", Hot topic given at the 14th International Conference on Vacuum Ultraviolet Radiation Physics (VUV 14), Cairns, Australia, July (2004).

131. "Probing the Molecular Environment using Spin-Resolved Photoelectron Spectroscopy" invited talk at Twelfth International Symposium on Polarization and Correlation in Electronic and Atomic Collisions (ICPEAC Satellite), Münster, given by G. Turri (postdoc), July 2004.

132. "Inner-Shell Double Photodetachment of Negative Ions", invited talk at the XIX International Conference on the Physics of Electronic and Atomic Collisions (ICPEAC) conference, July 25, 2003 Stockholm, Sweden.

133. "Studies of Complex Systems: From Atoms to Clusters", invited talks at the US-Indo Workshop, Argonne Nat. Lab. IL, May 15, 2003

134. "Photodetachment of Negatives Ions and Small Clusters", Invited presentation at the American Chemical Society (ACS), New Orleans, March 27, 2003

135. "Interaction of Radiation and Matter Within Vuv-Soft X Ray Regime", Plenary invited presentation to the National Finish Physical Society, Helsinki, Finland, March 21, 2003.

136. "From the Atoms to the Nano", Invited talk at the Nanostructure conference organized at ODU, Dec 12-

14, 2002.

137. "Probing Electron Correlations from Within; K-Shell Photodetachment of negative Ions, Invited Talk the ALS users meeting Workshop, Oct 12, 2002.

138. "K-Shell Photodetachement of Negative Ions using the ALS", International Workshop in Photoionization, IWP Kyoto, Japan, Aug. 2002.

139. "Probing Electron Correlation and Spin-Orbit Interaction", Invited presentation at the "Fano Memorial Symposium" Resonances and reflections: Profiles of Ugo Fano's Physics and its Influences, July 25, 2002.

140. Two-Electron Photodetachement of Li^- and He^-, International Conference of X-rays and Inner-Shell Phenomena (X2002), Rome Italy, June 14, 2002.

141. "Probing Electron Correlations from Within", Invited talk given at the National Division of the Atomic Molecular and Optical Physics (DAMOP) of the APS meeting, May 1st, 2002.

142. "Recent Advances in Photoelectron Spectroscopy of Atoms and Molecules", Invited talk at the Sixteenth International Conference on the Application of Accelerators in Research and Industry, Denton, Texas; 4-7 November 2000.

143. "Toward the complete experiment", Invited talk at the Annual Meeting of the Synchrotron Radiation Center of Wisconsin, Oct, 2000.

144. "Probing Structure and Dynamics using the ALS", Invited talk at the 2000 DOE contractors meeting, Warrenton, VA, September 2000.

145. "Recent Results in Photoelectron Spectroscopy of Atoms and Molecules"Invited talk at the Fifteenth International Conference on the Application of Accelerators in Research and Industry, Denton, Texas, 5-8 November 1998.

146. "Angle Resolved 2D Imaging of Electron Emission Processes in Atoms and Molecules using the ALS"Invited talk at the VUV10 International Conference on Vacuum Ultraviolet Radiation Physics, San Francisco, August 3-7, 1998.

147. "Recent Progresses in Atoms and Molecules using the ALS", Invited talk at the Sixth European Conference on Atomic and Molecular Physics, ECAMP VI in Siena, Italy, July 14-18, 1998.

148. "Experimental Observation and Theoretical Calculations of Rydberg Series on Hollow Atomic States", 1998 Canadian Association of Physics, CAP Congress ACP, Waterloo, Canada, June14-17, 1998.

149. "High Resolution Spectroscopy in Atoms and Molecules using the ALS", Invited talk at the International Workshop in Photoionization (IWP '97; ICPEAC satellite) in Chester, England, July 16, 1997.

150. "Recent Results using the Advanced Light Source", Invited talk given at the US-South American Conference", Rosario, Argentina, March 19, 1997.

151. "High Resolution Autoionization in Ar and Ne", invited talk at the Fourteenth International Conference on the Application of Accelerators in Research and Industry, Denton, TX; 5-8, 1996.

152. "Resonant Auger Raman Spectroscopy Used to Study the Angular Distribution of the Xe $4d_{5/2} \rightarrow 6p$ Decay Spectrum ", invited talk at the Gordon Conference on Electron Spectroscopy, July 8, 1996.

153. "Autoionization Resonances in Ar and Xe Using Photoelectron Spectroscopy", invited talk at the US-Indo Radiation Workshop in Dargeeling, India, March 18, 1996.

154. "High Resolution Photoelectron Spectroscopy", invited talk at the US-Indo Radiation Workshop at North Bengal University, Bagdogra, India, March 16, 1996.

155. “Why are the Values of the Experimental and Theoretical Ratios Different?,” invited talk at a Workshop on Double Photoionization, Boulder, CO, January 9, 1996.

156. “Resonant Auger Raman Spectroscopy,” invited talk at the Resonant Raman Workshop, Tulane University, Louisiana, December 9, 1995.

157. “Timing Operation in Photoionization Experiments,” talk given at the Timing Workshop at the ALS, Berkeley, CA, October 25, 1995“High Resolution Measurements at Beamline 9.0.1 of the ALS,” invited talk at the annual Users Meeting of the ALS, Berkeley, CA, October 23, 1995.

158. “High Resolution Photoelectron Spectroscopy,” invited talk at the 210th American Chemical Society (ACS) National meeting, Chicago, IL, August 21, 1995.

159. “Double Photoionization of He over Extended Energy Ranges,” invited talk at the XIX International Conference on the Physics of Electronic and Atomic Collisions (ICPEAC), Whistler, Canada, July 27, 1995.

160. “Probing Electron Correlation in He,” invited talk at the 1995 Atomic Physics Gordon Conference, Brewster’s Academy, NH, July 3, 1995.

161. "Photoionization of Atoms," invited talk at the DOE Workshop in Lexington, Kentucky, October 14, 1995.

163."Double Photoionization of He at Low and High Energy," invited talk at the International Workshop in Photoionization (IWP 94) in San Francisco, CA, October 26, 1994.

164. "Recent Advances in VUV Spectroscopy of Atoms," invited talk at the Optical Society of America (OSA) annual meeting in Dallas, Texas, October 5, 1994.

165. "Double Photoionization in He," Invited talk, APS meeting at the Divisional Meeting DAMOP, of the APS, April 18, 1994.

166. "Double Photoionization of He," Invited talk at a Workshop on Double Photoionization of He at Argonne National Laboratory. October 4-5, 1993.

167. "Energy Dependence of Double Photoionization of He at Intermediate Energies," Invited talk at the International Symposium on (e,2e) Collisions, Double Photoionization and Related Processes in Paris, July 17, 1993.

168. "Probing Electron Correlation in He," Invited talk at the Annual National Deutsch Physikalishe Gesellschaft, DPG, meeting in Berlin, March 16, 1993.

169. "Probing Electron Correlation in Helium-like Boron and in Helium," talk given at the National Division of the Atomic Molecular and Optical Physics (DAMOP) of the APS meeting, Chicago, IL; May 21, 1992.

170. "High Resolution Measurement Using Fast Ion Beams," talk at the DOE Workshop at Kansas State Univ., KS; October 15-16, 1991.

171. "Laser Measurements of QED Effects in Helium-like Boron," talk given at the Eleventh International Conference on the Application of Accelerators in Research and Industry, Denton, Texas; 5-8 Nov. 1990.

172. "First Measurement of Hyperfine Structure by Laser-rf Double Resonance in N_2^+," talk given at the Eleventh International Conference on the Application of Accelerators in Research and Industry, Denton, Texas; 5-8 Nov. 1990.

173. "High Precision Measurements of Hyperfine Structure in SCII, TmII, and N_2^+," talk given at the Tenth International Conference on the Application of Accelerators in Research and Industry, Denton, Texas; 7-9 November 1988.

INVITED PRESENTATIONS AT SEMINARS AND COLLOQUIA

1. "Capturing in Molecules the Dance Between Electrons and Nuclei with Bright and Fast Lasers", Colloquium at University of Arizona, February 28, 2025.

2. "Ultrafast molecular dynamics using lasers and FELs", Colloquium at Arizona State University, February 27, 2025.

3. "Probing Molecular Dynamics using Lasers", Seminar, Physics Department, University of Connecticut. October 2023."Probing molecules using FELs", Colloquium at Imperial College, London, UK, July 1, 2022.

4. "Career Launch and Development", Seminar given at Paris-Saclay, LIDYL, July 19th, 2022.

5. "Non-Linear Physics with FELs", Seminar given at Paris-Saclay, LIDYL, July 5th, 2022

6. "Introduction to Free Electron Lasers (FELs)", Seminar given at Paris-Saclay, LIDYL May 19th, 2022

7. "Publishing Research Results in Peer Reviewed Journals", Seminar given at Paris-Saclay, LIDYL, June 8th, 2022.

8. "Bright and Fast: Lasers to Capture in Molecules the Dance Between Electrons and Nuclei", Colloquium at the Institute for the Sciences of Light (ISL), University Paris-Saclay, February 22, 2022

9. "Probing molecular dynamics", Colloquium at Boise State University, Idaho, Electrical & Computer Engineering Dept, Feb 10, 2021

10. "Molecular dynamics using FELs", Colloquium at SLAC National labs, Feb 10, 2020.

11. "Towards making molecular movies", Colloquium at Argonne National Laboratory, Physics Division, April 26, 2019.

12. "Women in Physics", Colloquium to the UConn Physics Department, April 19, 2019.

13. "Molecular Dynamics using Synchrotrons and FELs", Seminar, MAXIV, Lund, Sweden, September 13, 2018.

14. Molecular dynamics, University of Lund, Sweden, September 14, 2018.

15. "Imaging molecules from within using FELs", Brookhaven National laboratory, Physics Division, BWIS, April 24, 2018.

16. Probing matter with FELs", colloquium at Wesleyan University, April 2016.

17. "Time-resolved investigation of C_{60} using FELs" Seminar at LCLS, SLAC National Lab, Stanford, June 15, 2016

18. "Probing Matter from Within", Special Dean's Colloquium presentation at Rowan University, April 2015.

19. "Molecular dynamics using FELs", Seminar given to University of Edinburg, Scotland, UK, July 5, 2014.

20. "Probing matter from within using FELs", seminar given to the graduate students at UConn, March 28, 2014.
21. "How to become a scientist", presentation given to women in math, science and engineering (WiMSE), March 2014

22. "Molecular and cluster dynamics with FELs", Workshop on Atomic and Molecular Advances, Argonne National Laboratory, APS division, April 19, 2013.

23. Probing matter from within with FELs", Colloquium at the UConn, Storrs, CT, February 22, 2013.

24. "Investigating atoms, molecules and cluster dynamics with FELs", Colloquium at WMU physics department, November 26, 2012.

25. "AMO physics with Free Electron Lasers", Seminar, The GANIL Accelerator facility, July 4, 2012, CAEN, Basse Normandie, France,

26. "Ionizing clusters with LCLS radiation", Seminar, Universite Paris VI, Jussieu, May 31, 2012, Paris, France.

27. "Preparing an LCLS experiment", Seminar for the Machine Control Center, LCLS, May 16, 2012, SLAC, Stanford University, CA.

28. "Ionizing Matter with Intense X-rays from the LCLS", Seminar at the LCLS, May 16, 2012, SLAC, Stanford University, CA.

29. "Molecular Dynamics with FEL", Seminar at Imperial College, London, UK, March 2, 2012.

30. "Probing matter from within", Seminar at the Centre de Development et Technology Avancee" (CDTA), Algiers, Algeria, March 12, 2012.

31. "Probing Molecules from Within using X-FEL", Seminar, Commissariat a l'Energie Atomique (CEA)" January 26, 2012, Paris, France.

32. "Multi-photon ionization using the world's first x-ray FEL", Seminar, at "Photon Science" in DESY, December 9th, Hamburg, Germany, 2011.

33. "Multi-photon ionization of molecules using the world's first x-ray FEL", Colloquium, University of Connecticut, Storrs, CT, April 22, 2011.

34. Blowing up molecules with LCLS", Seminar, ALS, LBNL, August 11, 2010

35. "Probing Matter from Within with Free Electron Laser", Seminar, University of Michigan, September 2010.

36. "Probing Matter from Within", Colloquium, Temple University, Philadelphia, PA, April 7, 2008.

37. "Walter's Johnson Symposium", Notre Dame University, Physics Department, South Bend, IN April 5, 2008.

38. "Cluster Physics using light Sources", Colloquium, Michigan State University, November 2007.

39. "Gender Equity: Strengthening the Physics Enterprise in Physics Departments and National Laboratories, Graduate College, WMU, November 9, 2007.

40. "AMO Science using the LCLS", Women in Science (WIS) Seminar, SLAC, Stanford, August 15, 2006.

41. "Future AMO Experiments using the LCLS" Seminar for Stanford Students, June 9 2006

42. "AMO Science using the LCLS", LCLS SAC, SLAC, Stanford, June 7, 2006.

43. "Probing Dynamics from Within", Colloquium, KTH (Royal Institute of Technology), Stockholm, Sweden, April 20, 2006.

44. "The exciting world of atomic, molecular and optical physics: a tool driven revolution", presentation as the opponent to the PhD dissertation of Emilio Garcia, Stockhom, Sweden, April 20, 2006

45. “Research and Funding”, Seminar at “Faculty Orientation”, August 23, 2005.

46. “Inner-shell photodetachment of negative ions”, Seminar at SOLEIL, third generation light source in Saclay, June 3, 2005, Orsay France.

47. “Probing matter from within”, Seminar, Pierre and Marie Curie Institute, Paris 6, France, May 27, 2005.

48. “Writing a grant proposal: Grant writing tips”, Seminar, WMU, May 10, 2005.

49. “Probing strongly correlated systems” Seminar, University of Michigan, April 12, 2005.

50. “Research in AMO at the ALS and Future Direction with the LCLS”, Seminar at the Hamburg, Germany FEL, March 1, 2005.

51. “Probing Dynamics from within”, Seminar at the ALS, LBNL, February 10, 2005.

52. “Probing Dynamics from Within”, Seminar, Physics Dept., Notre Dame University, South Bend, IN, October 4 2004.

53. “Inner-Shell studies of Negative Ions”, Seminar, Physics Department, University of California, Berkeley, March 17, 2004

54. “Probing Complex Systems from Within”, Seminar, Hope College, Holland, MI, February 13, 2004

55. “Synchrotron Based AMO”, Invited presentation to the Committee on Atomic, Molecular, and Optical Science (CAMOS), National Research Council, Nov 15, 2003, Irvine, CA

56. “Probing Dynamics from Within”, Colloquium at Old Dominium University, April 22, 2003.

57. “Physics is Fun”, Guest speaker at Elkhart Central, Elkhart, IN, May 8, 2003.

58. Probing Strongly Correlated Systems: From Atoms to Clusters, Colloquium, University of Oulu, Oulu Finland. March 18, 2003.

59. "Studies of Strongly Correlated Systems in the Gas-Phase", Seminar, Lawrence Berkeley National Laboratory, August 14, 2002

60. “Studies of Dynamics in Atoms and Molecules using the ALS”, Colloquium, Oakland University, April 25, 2002

61. “The Exciting World of Science”, WMU colloquium, Nov. 8, 2001

62. “Probing Dynamics and Structure in Atoms and Molecules using the ALS, Seminar, Berkeley, CA Aug. 15, 2001

63. “Future Scientific Development,” Keynote speaker at the Kalamazoo Area Mathematics and Science center (KAMSC) commencement, May 2001

64. “Probing Dynamics in atoms using the ALS” Seminar, Notre Dame University, South Bend, IN, Nov. 13, 2000.

65. “Studies of Molecular Spectroscopies”, Seminar, ALS, Lawrence Berkeley National laboratory, Feb. 10, 2000.

66. “Studies of Correlated Systems. Part I”, Seminar, ALS, Lawrence Berkeley National laboratory, Jan 27, 2000.

67. “High Resolution Photoelectron Spectroscopy of Molecules” Colloquium, Department of Chemistry, WMU, Oct. 11, 1999.

68. “The AMO Facility at the ALS”, Colloquium, Physics Dept, Western Michigan University, Sept. 20, 1999.

69. “AMO research using the ALS” progress report for the Lawrence Berkeley National Laboratory review of ALS, LBNL, University of CA, June 10, 1999.

70. “High Resolution Photoelectron Spectroscopy in Atoms and Molecules using the ALS”, Colloquium, Physics Department, KTH (Royal Institute of Technology), Stockholm, Sweden, June 4, 1999.

71. “High Resolution Photoelectron Spectroscopy in Atoms and Molecules using the ALS”, Colloquium, LURE, Universite d’Orsay, France, May 26, 1999.

72. “High Resolution Photoelectron Spectroscopy in Atoms and Molecules using the ALS”, Colloquium, University of Nevada, Reno, November 16, 1998.

73. “Autoionization Resonances with high resolutions”, Seminars at a South American Summer School, Cuernavaca, Mexico, May 7&8, 1997.

74. “High Resolution Spectroscopy in Atoms and Molecules using the ALS”, Colloquium, University of Illinois at Chicago, Chicago, IL, April 29, 1997.

75. “Two-Dimensional Angle Resolved High Resolution Spectroscopy Using the Advanced Light Source”, Colloquium, Texas A&M University, College Station, TX, April 3, 1997.

76. “Recent Results from Beamline 9.0.1 of the ALS”, progress report given at the ALS users meeting, Lawrence Berkeley National Laboratory, Berkeley, CA, October 22, 1996.

77. “Recent Results using the Advanced Light Source”, Seminar at Notre Dame University, South Bend, IN,April 29th, 1996.

78. “High Resolution Photoexcitation and Photoionization of Atoms,” Colloquium, Louisiana State University, Baton Rouge, Louisiana, December 7, 1995.

79. “Problems in Double Photoionization in He” Seminar, Kansas State University, Manhattan, KS, October 27, 1995.

80. “High Precision Measurements in Photoionization and Photoexcitation,” Colloquium, Kansas State University, Manhattan, KS, October 26, 1995.

81. “High Resolution Photoelectron Spectroscopy,” Colloquium, Central Michigan University, March 1995.

82. “Photoionization of atoms”, Physics Colloquium, University of Nevada, Reno, May 25, 1994.

83. "Synchrotron Based Atomic Physics," Colloquium, Andrews University, May 6, 1994.

84. "Photoionization of Rare Gas Atoms," Seminar, Physics Department, University of Virginia, Feb. 21, 1994.

85. "Synchrotron Based Atomic Physics," Colloquium, Physics Department, Western Michigan University, Nov. 9, 1993.

86. "Laser Spectroscopy and Photoionization of He," Seminar, Physics Department, Stony Brook University, Long Island, NY, Nov. 5, 1993.

87. "Laser Spectroscopy and Photoionization of He," Seminar, Physics Department, Wesleyan University, Wesleyan, CN, Nov. 4, 1993.

88. "Laser Spectroscopy and Photoionization of He," Seminar, Physics Department, Harvard University, Cambridge, MA, Nov. 3, 1993.

89. "Photoionization of Atoms and Laser Spectroscopy of Molecules," Colloquium, Physics Department, University of Tennessee, USA. Feb. 9, 1993.

90. "Probing Electron Correlation in He," Seminar, Physics Department, Freiburg University, Freiburg, Germany. Jan. 29, 1992.

91. "Double Resonance Spectroscopy of Atomic and Molecular Ions," Seminar, Physics Department, University of Kaiserslautern, Kaiserslautern, Germany. Dec. 15, 1992.

92. "Etudes Presentes et Futures des Interactions Photon-Ions et des Sources de Rayonement Laser ou Avec le Rayonement Synchrotron," Seminar, LURE, Université Paris Sud, Orsay, Paris, France; June 18, 1992.

93. "Synchrotron Based Atomic Physics," Seminar, Notre Dame University, South Bend, IN; November 4, 1991.

94. "Laser/Rf Measurements in N_2^+," Seminar, Argonne National Laboratory, IL; October 10, 1991.

95. "Laser/Rf Spectroscopic Techniques in Fast Ions Beams," Seminar, Chemistry Department, University of British Columbia, Vancouver, BC; July 3, 1991.

96. "High Resolution Laser Spectroscopy," Colloquium, Physics Department, Haverford College, PA; February 6, 1991.

97. "High Resolution Spectroscopy in Atomic Ions and Molecules," Colloquium, Physics Department, Western Michigan University, Kalamazoo, MI; December 11, 1990.

98. "High Precision Laser Spectroscopy of Atomic and Molecular Ions," Seminar, Physics Department, Texas A&M University, College Station, TX; October 12th, 1990.

99. "Laser-Rf Double Resonance Study of N_2^+," Seminar, Physics Division, Argonne National Laboratory, IL; April 1990.

100. "Laser/Rf Double Resonance and Stimulated Resonance Raman Measurements of Hyperfine Structure in Ions," Seminar, Physics Department, University of Virginia, Charlottesville, VA; April 19, 1989.

101. "Laser/Rf Spectroscopic Techniques in Fast Ions Beams," Seminar, Physics Department, Laval University, Quebec, Canada; March 20, 1989.

102. "Laser Photodetachment of HS^- in a Magnetic Field," Seminar, Argonne National Laboratory, IL; October 1987.

103. "Laser Photodetachment of Negative Ions in a Magnetic Field," Seminar, Physics Department, University of Virginia, Charlottesville, VA; March 1987.

CONFERENCE CONTRIBUTIONS/ABSTRACTS

Over 600 abstract contributions to national and international conferences and workshops.

PROMOTING DIVERSITY VIA SCIENCE ADVOCACY:

Significant Contribution in Outreach/Mentoring Nationally and Internationally to Promote, Retain and Increase the Number of Women in Physics and STEM fields in general. Also, mentoring of African American/Hispanic students.

- Chaired the 2025 CU*iP Conference for Undergraduate Women and Gender Minorities in Physics at UConn. Berrah initiated the effort and wrote the proposal to the APS to host the conference. The proposal was successful, and we hosted about 100 students at UConn with the support of UConn leadership and physics Department Head, faculty, staff and students

- Contributing to outreach since 1988 when Berrah was a postdoc.
- Frequent and very close contribution since 2005 with the American Physical Society Committee on the Status of Women in Physics
- Contribution via the COACh board to advance the careers of women in STEM fields.

1. As Head of the Physics Department (2014-2018), Berrah initiated outreach to minority (African American/Hispanics) middle and high school students to expose them to STEMS field and mentor them. About 40 students were bused from different schools of the Hartford area, CT, to see Physics lab demonstrations, talk to undergraduate, graduate students and faculty. The Goal is Inclusion and Active Recruitment to Diversify the Workforce. (April 2018)

2. As Head of the Physics Department, Berrah funded outreach visits from middle and high school women to expose them to STEMS field (March 2018).

3. Role model/mentorship: Give presentations to focused women conferences in STEM fields in the US and around the world. Meet with women caucuses when presenting seminars/colloquia at institutions around the world since 1989 (USA, EU {France, Germany, Italy, UK, Denmark, Sweden}, North Africa{ Algeria, Morocco, Tunisia}.

4. International Gender equity in STEM fields: Helping organize and conduct workshops on coaching women in North Africa to build successful careers in the STEM fields. Workshops were conducted in Algeria (January 2013, November 2016), Tunisia (March 2013, November 2015), and Morocco (March 2013, April 2015) funded by the US State Department and University of Oregon funds (COACh headquarter). Workshop in Morocco, November 2017 with US state department funds.

5. Contributed to the organization of the follow up effort on the APS national workshops "Gender Equity in Physics" 2007-present.

6. Raised federal funds and organized, as the chair of the APS/CSWP, a national workshop (funded as the PI by DOE and NSF) on "Gender Equity: Strengthening the physics enterprise in academia and national laboratories" for Chairs of the 50 most research-oriented Physics Departments and 20 physics-related Division Directors of National Laboratories, May 6-8, 2007. Co-chaired the workshop with past APS President Arthur Bienenstock, Stanford University. The workshop report, which was mailed to most universities to serve as a guide with our recommendations can be found at: http://www.aps.org/programs/women/workshops/gender-equity/upload/genderequity.pdf

7. Site visits to help Physics Department improve their culture, under the sponsorship of the APS, Committee on the Status of Women in Physics (CSWP) several universities.

8. Mentoring of excellent female high school students, Liz Otto, CAMSE, 2003.

9. "Physics is Fun", Guest speaker at Elkhart Central, Elkhart, IN, May 8, 2003

10. Upper bound math Science, Research mentorship program for African-American females, Summer 2000.

11. "Take our Daughters and Sons to Work Day" Gave tours of accelerator facilities to elementary students to encourage them to think about science, April 1999, Advanced Light Source, (ALS), Lawrence Berkeley National Laboratory.

12. "The Status of Woman in Physics", Seminar given at the graduate student fair at Argonne National Laboratory. October 2, 1993.

13. "Career in Physics: It Is Fun!", Seminar given as a Career Orientation Representative at the yearly Conference on "Science Career in Search of Women," Argonne National Laboratory, April 24, 1992.

14. "Women in Research: Challenges and Opportunities," Lecture given at Argonne National Laboratory, Division of Educational Programs at the Graduate School Fair, October 5, 1991.

15. "Research in Physics," presentation to Academy Teachers on December 14, 1990.

16. Seminar, Conference on "Science Careers in Search of Women," at Argonne National Laboratory, organized by the Department of Education May 18, 1990.

Funding for research: Over $10M funding from DoE, BES and NSF