

## CURRICULUM VITAE

**Philippe A. Collon**

### Address

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### Personal

Citizenship	Belgium
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### Education

Sep. 1987 – Jun. 1987	Université Catholique de Louvain, Belgium  Undergraduate final work: “Experimental study of a multiwire X, Y gas filled detector and elaboration of an analysis and interpretation procedure.” This work (1992-93) was part of the DEMON project at the Cyclotron of Louvain-La-Neuve, Belgium. Supervisor: Prof. Youssef El Masri
June 1993	Licencié en Sciences Physiques – Distinction
Nov. 1993 – Oct. 1999	Universität Wien – Institut Für Radiumforschung und Kernphysik, VERA Laboratory, Vienna, Austria  Ph.D. thesis: “Developing a dating technique for groundwater with $^{81}\text{Kr}$ using Accelerator Mass Spectrometry.” The AMS detection method was developed (1994-98) at the Superconducting Cyclotron Laboratory at Michigan State University. Supervisor: Prof. Walter Kutschera
July 1999	Ph.D. Thesis defense passed with distinction

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## Languages

French, English, German, and Dutch

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## Positions

July 2013 – present	Director of Undergraduate Study and associate department chair, Physics department
July 2012 – June 2012	Kaneb Center of Teaching and learning Faculty fellow
Oct. 2009 – present	Outreach Coordinator for the Underground Accelerator Collaboration DIANA at the new National Deep Underground Science and Engineering Laboratory (DUSEL)
July 2009 – present	Associate Professor, Physics Department, University of Notre Dame, Notre Dame, Indiana
May 2009 – present	Radiation officer for the physics laboratories in Jordan Hall of Science, University of Notre Dame, Notre Dame, Indiana
July 2009 – Dec 2011	Associate Director of the Center for Undergraduate Scholarly Engagement (CUSE) of the University of Notre Dame
Aug. 2003 – Jun. 2009	Assistant Professor, Physics Department, University of Notre Dame, Notre Dame, Indiana
Jul. 2001 – Aug. 2003	Post-Doctoral research position at the Lamont-Doherty Earth Observatory of Columbia University
Nov. 1999 – Jun. 2001	Post-Doctoral research position at the Physics Division of Argonne National Laboratory
Jan. 1994 – Oct. 1999	Supervision of the advanced nuclear physics laboratory classes for undergraduate students of the University of Vienna
Jan. 1993 – Oct. 1999	University Assistant at the Institut für Radiumforschung und Kernphysik of the University of Vienna
Summer 1992	Summer internship at the Institut de Physique Nucléaire of the Université Catholique de Louvain, with Prof. P. Lipnick

1989 – 1999

Math and Physics tutoring for secondary grade students

**Honors, Awards and professional memberships:**

- 2010 Rev. Edmund P. Joyce, C.S.C., Award for Excellence in Undergraduate Teaching, University of Notre Dame
- 2012-2013 Kaneb Center for Teaching and learning Faculty Fellow.
- 2015 Dockweiler Award for Excellence in Undergraduate Advising, University of Notre Dame.
- Member: Österreichische Physikalische Gesellschaft, European Physical Society, American Physical Society, American Association of Teachers

**Service to profession:**

Reviewer:

- External reviewer for Nucl. Instr. and Meth., Elsevier editors
- External reviewer for Phys. Rev, APS editors
- External reviewer for NSF, grant applications (Nuclear Physics and Geosciences)

Co-Organizer:

- ÖPG-Jahrestagung, 22-26 September 1997, Universität Wien, Austria.
- 8<sup>th</sup> International Conference on Accelerator Mass Spectrometry, 6-10 September 1999, Palais Auersperg, Vienna, Austria
- 2015-present, Member of the American Physical Society/Division of Nuclear Physics (APS/DNP) Thesis Award panel.
- 2011-2014, Natural Science and Engineering Research Council of Canada (NSERC/CRSNG) member of the Canadian Scholarship and Fellowships Selection committee for Physics and Astronomy
- 2009 – 2011, Outreach Coordinator for the Underground Accelerator Collaboration DIANA at the new National Deep Underground Science and Engineering Laboratory (DUSEL).
- 2005-present, member of the JINA Frontier Center (NSF Frontier center on Nuclear astrophysics)

- 1997-1999, member of the IAEA Co-ordinated research program “CRP on Isotope Techniques for the Assessment of Slow Moving Deep Groundwaters and their Potential Application for the Assessment of Waste Disposal Sites”.

### **Service to University:**

- 2014 Panel member for the College of Science Diversity Training day
- 2012-2013, Faculty Fellow, Notre Dame Kaneb Center For Teaching and Learning.
- 2013-Present, Associate Department Chair, Director of Undergraduate Studies ND Physics Department. Chair of the Undergraduate Curriculum committee.
- 2013-Present, member of the AnnBryce scholars initiative selection committee.
- 2012 Panel member for the College of Science Diversity Training day.
- 2011-2012 Angers, France Notre Dame program Review Committee member for the Office of International Affairs.
- 2011-2012 Dean of First-year of Studies Advisory Committee.
- 2009-2013 Class of 13 Physics advisor.
- 2009 – Present, radiation officer for the physics laboratories in Jordan Hall of Science, University of Notre Dame, Notre Dame, Indiana.
- 2009 – 2011, Associate director of the Center for Undergraduate Scholarly Engagement (CUSE) of the University of Notre Dame.
- 2009 Directed reading advisor for the Notre Dame ESTEEM program.
- 2008-2009 member of the Notre Dame “residential Scholars program” of the Office of Student affairs.
- 2005, Organizer of Departmental “Footbal Saturday” open doors.
- 2005, College of Science Web advisor committee member.
- 2003-2006, ND Physics department graduate recruitment committee member (Chair for 05-06).
- 2003-2008, ND Physics department demonstrations & Instructional labs committee member (2003-2008).

- 2004-2007 Physics Representative on Faculty Senate, Chair of Student Affairs Committee (2006-2007), member of Executive Committee of Fac. Senate and ex Officio Member of Academic Council. Faculty Senate representative to Student Senate (2005-2008). Member of the Advisory Committee to the Provost on the Evaluation of Teaching (For Tenure and Promotion) (2006-2007).

## Students and theses supervised:

### Graduate Students:

**Current students:** Karen Chamberlin  
Michael Skulski  
Tyler Anderson

### Graduated Students:

- Chris Schmitt, June 2010, Thesis: “Equilibrium Charge State Distribution of low-Z ions incident on Thin Self-Supporting Foils”
- Daniel Robertson, July 2010, Thesis: “New measurements for the Astrophysically Important  $^{40}\text{Ca}(\alpha,\gamma)^{44}\text{Ti}$  reaction”
- Mathew Bowers, April 2013, Thesis: “A study of  $^{36}\text{Cl}$  production in the Early Solar System”
- Wenting Lu, June 2015 Thesis: “ $^{93}\text{Zr}/^{93}\text{Nb}$  Isobar Separation Development for AMS Measurement”
- William Bauder, July 2015, Thesis: “A measurement of Actinide Neutron Transmutation With Accelerator Mass Spectrometry in Order to Infer Neutron capture Cross sections”

### Undergraduate Students:

- **Undergraduate Research (2004-2005):** Tristan Butterfield , Patricia Engel, George Hsu, Steve Kurtz , Angelo Signoracci
- **Undergraduate Research (2005-2006):** John Biddle, Tristan Butterfield, Patricia Engel, George Hsu, Steve Kurtz, Zachary Liptak (Fall 2005), Angelo Signoracci, Brian Walsh , Jason Wittenbach, Jeremy Webb (University of Ontario)
- **REU summer research 2005:** Rhiannon Meharchand, Tristan Butterfield
- **Undergraduate Research (2006-2007):** Steve Kurtz, Joseph Hagmann, Thomas Rehagen, Patrick Brown (Fall 06), John Biddle (Fall 06), Brian Walsh, Scott Feister, Laura Cass, Stanley Stryker
- **August-November 2006:** Tobias Bos (Universitaet Mainz), Wolfgang Heiermann (Universitaet Mainz), Jeremy Webb (University of Ontario)
- **REU Summer Research 2006:** Ashley Jackson, Jodie Cohen
- **Undergraduate Research (2007-2008):** Joseph Hagmann, John Biddle, Adam Woodruff, Sam Novario, Brian Walsh, Kirk Post, Scott Feister, Sean Sullivan, Andrew Hartnett

- **REU Summer Research 2007:** Ashley Jackson, Jaimie Krankle
- **Undergraduate Research (2008-2009):** Kirk Post, Sam Novario, Michael Carilli, Daniel Demars, Matt Russel
- **REU Summer research 2008:** Michael Carilli, Kirk Post, Guilhem Ribeill
- **Undergraduate research (2009-2010):** Michael Troy, J.J. Sass, Katherine Engstrom, Declan Sullivan, Joseph Livingston, Alex Bess, Jeffrey Berryman, Sam Novario
- **REU Summer research 2009 :** Marcus Wiggs
- **Undergraduate research (2010-2011):** Roland Perkins, David Howe, Patrick Bedard, Mason Faulk, Michael Troy, Daniel Irvine, Joseph Sass
- **REU Summer research 2010:** Omar Magana
- **Undergraduate research (2011-2012):** Roland Perkins, David Howe, Patrick Bedard, Mason Faulk, Kirby Hermansen, Ben Guerin, Steven Jepeal
- **REU Summer research 2011:** Quinn Hailes
- **Undergraduate research (2012-2013):** Sean Howard, Sean Brudney, Louis Hiza, James Miller, Kirby Hermansen, Ben Guerin, Steven Jepeal
- **Undergraduate research (2013-2014):** Sean Howard, Sean Brudney, Louis Hiza, James Miller, Kirby Hermansen, Ben Guerin, Steven Jepeal, William Wolf
- **REU Summer research 2013:** Ruiyang Zhao, Kirby Hermansen
- **Undergraduate research (2014-2015):** Sean Howard, Sean Brudney, Louis Hiza, James Miller, Kirby Hermansen, Steven Jepeal, William Wolf
- **REU Summer research 2014:** Ben Guerrin, Lindsey Riordan

### Honors Theses Supervised

1. “Implementation and Calibration of a New PPAC Detector and Support Electronics for a Browne-Buechner Spectrograph,” Angelo Signoracci (undergraduate research award, College of Science, 2005), University of Notre Dame, Honor Program Thesis, April 6, 2006. Selected for presentation at the final Honors Program Colloquium, April 2006.
2. “Detector Calibration for AMS and Nuclear Astrophysics Measurements,” Patricia Engel, University of Notre Dame, Honors Program Thesis, April 6, 2006.
3. “Design and development of a new gas-filled detection system for the focal plane of the Notre Dame Browne-Buechner Spectrograph,” Steven Kurtz, Honors Program Thesis, April 2007.
4. “Experimental Verification of initial magnetic channel elements for the K250 superconducting synchrocyclotron,” Andrew T. Hartnett, Honors Program Thesis, April 2008. Selected for presentation at the final Honors Program Colloquium, April 2008.
5. “Stable Isotope Mass Spectrometry and Paleodiet Studies,” Joseph A. Hagmann, Honors Program Thesis, April 2008.

## Publications in peer reviewed journals

1. “Detection efficiency of the neutron modular detector DEMON and related characteristics,” I. Tilquin, Y. El Masri, M. Parlog, Ph. Collon, M. Hadri, Th. Keutgen, J. Lehmann, P. Leleux, P. Lipnik, A. Ninane, F. Hanappe, G. Bizard, D. Durand, P. Mosrin, J. Péter, R. Régimbart, and B. Tamin, *Nucl. Instr. Meth. A* 365, 446-461 (1995).
2. “Measurement of  $^{81}\text{Kr}$  in the atmosphere,” P. Collon, T. Antaya, B. Davids, M. Fauerbach, R. Harkewicz, M. Hellstrom, W. Kutschera, D. Morrissey, R. Pardo, P. Paul, B. Sherrill, and M. Steiner, *Nucl. Instr. Meth. B* 123, 122-127 (1997).
3. “VERA: A new facility in Vienna,” W. Kutschera, P. Collon, H. Friedmann, R. Golser, P. Hille, A. Priller, W. Rom, P. Steier, S. Tagesen, A. Wallner, E. Wild, and G. Winkler, *Nucl. Instr. Meth. B* 123, 47-50 (1997).
4. “Measurement of the Long-lived Radionuclide  $^{81}\text{Kr}$  in Pre-nuclear and Present-day Atmospheric Krypton,” P. Collon, D. Cole, B. Davids, M. Fauerbach, R. Karkewicz, W. Kutschera, D.J. Morrissey, R. Pardo, M. Paul, B.M. Sherrill, and M. Steiner, *Radiochimica Acta* 85, 13-19 (1999).
5. “ $^{81}\text{Kr}$  in the Great Artesian basin, Australia: A new method for dating very old groundwater,” P. Collon, W. Kutschera, B. Lehmann, H.H. Loosli, R. Purtschert, A. Love, L. Simpson, D. Cole, B. Davids, D.J. Morrissey, B.M. Sherrill, M. Steiner, R. Pardo and M. Paul, *Earth and Planetary Science Letters* 182/1, 103-113 (2000).
6. “A New Method to Detect Cosmogenic  $^{81}\text{Kr}$ ,” P. Collon, Ph.D. Thesis, submitted and accepted by the Formal- und Naturwissenschaftliche Fakultät der Universität Wien, June 1999.
7. “Widths of astrophysically important resonances in  $^{18}\text{Ne}$ ,” B. Harss, C.L. Jiang, K.E. Rehm, J.P. Schiffer, J. Caggiano, P. Collon, J.P. Green, D. Henderson, A. Heinz, R.V.F. Janssens, J. Nolen, R.C. Pardo, M. Paul, T. Pennington, R.H. Siemssen, A.A. Sonzogni, J. Uusitalo, I. Wiedenhoever, T.F. Wang, F. Borasi, R.E. Segel, J.C. Blackmon, M. Smith, A. Chen, and P. Parker, *Phys. Rev. Lett. C* 65, 035803-1 (2002).
8. “Unexpected Behaviour of Heavy-Ion Fusion Cross Sections at Extreme Sub-Barrier Energies,” C.L. Jiang, H. Esbensen, K.E. Rehm, B.B. Back, R.V.F. Janssens, J.A. Caggiano, P. Collon, J.P. Green, A. Heinz, D. Henderson, I. Nishinaka, T.O. Pennington, D. Seweryniak, *Phys. Rev. Lett.* 85, 052701-1 (2002).
9. “First Studies of Large Angle Alpha Scattering on a N=Z Nucleus above A=40,” K.E. Rehm, C.L. Jiang, I. Ahmad, J. Caggiano, P. Collon, J.P. Green, D. Henderson, A. Heinz, R.V.F. Janssens, P. Mohr, M. Paul, R.C. Pardo, T.O. Pennington, J.P. Schiffer, R.H. Siemssen, and A. Wuosma, *Phys. Rev. Lett.* 89, 132501-1 (2002).
10. “A comparison of groundwater dating with  $^{81}\text{Kr}$ ,  $^{36}\text{Cl}$  and  $^4\text{He}$  in four wells of the Great Artesian Basin, Australia,” B.E. Lehman, A. Love, R. Purtschert, P. Collon, H.H. Loosli, W. Kutschera, U. Beyerle, W. Aschbach-Hertig, R. Kipfer, S.K. Frape, A. Herczeg,

- J. Moran, I.N. Tolstikhin, M. Groening, *Earth and Plant. Sci. Lett.* 211, 3-4, 237-250 (2003).
11. "Development of an AMS method to study oceanic circulation characteristics using cosmogenic  $^{39}\text{Ar}$ ," Ph. Collon, M. Bichler, J. Caggiano, et al., *Nucl. Inst. and Meth. in Phys. Res. B* 223, 428-434 (2004).
  12. "Ocean Circulation and ECR sources: Measurement of the  $^{39}\text{Ar}$  Isotopic ratio in seawater," M. Gaelens, M. Loiselet, G. Ryckewaert, R.C. Pardo, R.H. Scott, R. Vondrasek, Ph. Collon, W. Kutschera, *Rev. Sci. Instrum.* 75, 1916 (2004).
  13. "Tracing Noble Gas Radionuclides in the Environment," P. Collon, Z.-T. Lu, W. Kutschera, *Annu. Rev. Nucl. Part. Sci.* 53, 39-67 (2004).
  14. "Influence of nuclear structure on sub-barrier hindrance in Ni+Ni fusion," C.L. Jiang, K.E. Rehm, R.V.F. Janssens, H. Esbensen, I. Ahmad, B.B. Back, P. Collon, et al., *Phys. Rev. Lett.* 93, 012701 (2004).
  15. "Development of an AMS method to study oceanic circulation characteristics using cosmogenic  $^{39}\text{Ar}$ ," Ph. Collon, M. Bichler, J. Caggiano, L. DeWayne Cecil, Y. El Masri, R. Golser, C.L. Jiang, A. Heinz, D. Henderson, W. Kutschera, B.E. Lehmann, P. Leleux, H.H. Loosli, R.C. Pardo, M. Paul, K.E. Rehm, P. Schlosser, R.H. Scott, W.M. Smethie, Jr., and R. Vondrasek, *Nucl. Instr. and Meth. B* 223-224, 428 (2004).
  16. "The stellar  $(n, \gamma)$  cross section of  $^{62}\text{Ni}$ ," H. Nassar, M. Paul, I. Ahmad, M. Bettan, D. Berkovits, P. Collon, S. Dababneh, S. Ghelberg, J.P. Greene, A. Heger, M. Heil, D.J. Henderson, C.L. Jiang, F. Käppeler, H. Koivisto, S. O'Brien, R.C. Pardo, N. Patronis, T. Pennington, R. Plag, K.E. Rehm, R. Reifarh, R. Scott, S. Sinha, X. Tang, R. Vondrasek, *Phys. Rev. Lett.* 94, 092504 (2005).
  17. "Hindrance of heavy-ion fusion at extreme sub-barrier energies in open-shell colliding systems," C.L. Jiang, K.E. Rehm, H. Esbensen, R.V.F. Janssens, B.B. Back, C.N. Davids, J.P. Greene, D.J. Henderson, C.J. Lister, R.C. Pardo, T.O. Pennington, D. Peterson, P. Collon, S. Kurtz, M. Paul, D. Seweryniak, B. Shumard, X.T. Tang, I. Tanihata, S. Sinha, Z. Zhou, *Phys. Rev. C* 71, 044613 (2005).
  18. "A new focal-plane detector system at the Argonne Fragment Mass Analyzer for low fusion-evaporation cross section measurements," C.L. Jiang, D.J. Henderson, T.O. Pennington, D. Seweryniak, I. Tanihata, K.E. Rehm, C.N. Davids, B.B. Back, P. Collon, J.P. Greene, R.V.F. Janssens, S. Kurtz, C.J. Lister, R.C. Pardo, M. Paul, D. Peterson, B. Shumard, S. Sinha, X.D. Tang, S. Zhou, *Nucl. Instr. and Meth. A* 554, 500-513 (2005).
  19. "First evidence of fusion hindrance for a small Q-value system," C.L. Jiang, B.B. Back, H. Esbensen, R.V.F. Janssens, S. Misicu, K.E. Rehm, P. Collon, C.N. Davids, J. Greene, D.J. Henderson, L. Jisonna, S. Kurtz, C.J. Lister, M. Notani, M. Paul, R. Pardo, D. Peterson, D. Seweryniak, B. Shumard, X.D. Tang, I. Tanihata, X. Wang, S. Zhu, *Phys. Lett. B* 640, 18-22 (2006).



20. “A new AMS setup for Nuclear Astrophysics experiments,” D. Robertson, C. Schmitt, P. Collon, D. Henderson, B. Shumard, L. Lamm, E. Stech, T. Butterfield, P. Engel, G. Hsu, G. Konecki, S. Kurtz, R. Meharchand, A. Signoracci, J. Wittenbach, Nucl. Instr. and Meth. B 259, 669-672 (2007).
21. “Technological Development for Half-life Measurement of  $^{146}\text{Sm}$  Nuclide,” N. Kinoshita, T. Hashimoto, T. Nakanishi, A. Yokoyama, H. Amakawa, T. Mitsugashira, T. Ohtsuki, N. Takahashi, I. Ahmad, J.P. Greene, D.J. Henderson, C.L. Jiang, M. Notani, R.C. Pardo, N. Patel, K.E. Rehm, R. Scott, R. Vondrasek, L. Jisonna, P. Collon, D. Robertson, C. Schmitt, X.D. Tang, Y. Kashiv, and M. Paul, Journal of Nuclear and Radiochemical Sciences, Vol. 8, No.2, pp. 109-112 (2007).
22. “Fusion Hindrance for a positive Q-value System,” C.L. Jiang, B.B. Back, H. Esbensen, J.P. Greene, R.V.F. Janssens, D.J. Henderson, H.Y. Lee, C.J. Lister, M. Notani, R.C. Pardo, N. Patel, K.E. Rehm, D. Seweryniak, B. Shumard, X. Wang, S. Zhu, S. Mişicu, P. Collon, and X.D. Tang, Phys. Rev. C 78, 017601 (2008).
23. “First results from the nuclear astrophysics AMS program at the NSL using the MANTIS system in gas-filled mode,” D. Robertson, C. Schmitt, Ph. Collon et al., Nucl. Instr. and Meth. B 266 (2008) 3481.
24. “Discovery of underground argon with low level of radioactive  $^{39}\text{Ar}$  and possible applications to WIMP Dark Matter detectors,” D. Acosta-Kane, R. Acciarri, O. Amaize, M. Antonello, B. Baibussinov, M. Baldo Ceolin, R. Bansall, L. Basgall, A. Bazarko, P. Benetti, J. Benziger, A. Burgers, F. Calaprice, E. Calligarich, M. Cambiaghi, N. Canci, F. Carbonara, M. Cassidy, F. Cavanna, S. Centro, A. Chavarria, D. Cheng, A.G. Cocco, P. Collon, F. Dalnoki-Veress, E. de Haas, F. Di Pompeo, G. Fiorillo, F. Fitch, V. Gallo, C. Galbiati, M. Gaull, S. Gazzana, L. Grandi, A. Goretti, T. Highfill, R. Highfill, T. Hohman, An. Ianni, Al. Ianni, A. LaCava, M. Laubenstein, H.Y. Lee, M. Leung, B. Loer, H.H. Loosli, B. Lyons, G. Mangano, D. Marks, K. McCarty, G. Meng, C. Montanari, S. Mukhopadhyay, A. Nelson, O. Palamara, L. Pandola, R. Pardo, F. Pietropaolo, T. Pivonka, A. Pocar, R. Purtschert, A. Rappoldi, G. Raselli, E. Rehm, F. Resnati, D. Robertson, M. Roncadelli, M. Rossella, C. Rubbia, J. Ruderman, J. Russell, R. Saldanha, C. Schmitt, E. Segreto, A. Shirley, A.M. Szec, R. Tartaglia, T. Tesileanu, S. Ventura, C. Vignoli, C. Visnjic, R. Vondrasek, P. Wraight, and A. Yushkov, Nucl. Instrum. and Meth A 587 (2008) 46-51.
25. “Ultra-sensitive detection of  $p$  process nuclide  $^{146}\text{Sm}$  produced by  $(\gamma, n)$ ,  $(p, pn\epsilon)$  and  $(n, 2n)$  reactions,” N. Kinoshita, T. Hashimoto, T. Nakanishi, A. Yokoyama, H. Amakawa, T. Mitsugashira, T. Ohtsuki, N. Takahashi, I. Ahmad, J.P. Greene, D.J. Henderson, C.L. Jiang, M. Notani, R.C. Pardo, N. Patel, K.E. Rehm, R. Scott, R. Vondrasek, L. Jisonna, P. Collon, D. Robertson, C. Schmitt, X.D. Tang, Y. Kashiv, H. Nassar and M. Paul. Journal of Physics G. Nuclear and Particle Physics 35 (2008) 014033.
26. “Equilibrium mean charge states for low  $Z$  ions at  $\leq 1$  MeV/u in Carbon,” C. Schmitt, J. LaVerne, D. Robertson, M. Bowers, W. Lu, P. Collon, Phys. Rev. A 80, 052711 (2009).

27. "Ultra-Low Measurements of  $^{40}\text{K}$  for SNO+ utilizing Accelerator Mass Spectrometry – Proof of Principle," D. Robertson, J. Baker, M. Bowers, P. Collon, J. Heise, K. Keeter, C. Schmitt, E. Tatar, C. Taylor, W. Lu, Nucl. Instr. & Meth. B 268, 718-721 (2010).
28. "Equilibrium charge state distributions for boron and carbon ions emerging from carbon and aluminum targets," C. Schmitt, J.A. LaVerne, D. Robertson, M. Bowers, W. Lu, P. Collon, Nucl. Instr. & Meth. B 268, 1551-1557 (2010).
29. "Fusion Hindrance for  $^{27}\text{Al} + ^{45}\text{Sc}$  and other systems with a positive Q value," C.L. Jiang, K.E. Rehm, H. Esbensen, B.B. Back, R.V.F. Janssens, P. Collon, C.M. Deibel, B. DiGiovine, J.M. Figueira, J. P. Greene, D. J. Henderson, H.Y. Lee, M. Notani, S.T. Marley, R.C. Pardo, N. Patel, D. Seweryniak, X.D. Tang, C. Ugalde, S. Zhu, Phys. Rev. 81, (2010) 024611.
30. "Target dependence for low-Z ion charge state fractions," C. Schmitt, J. LaVerne, D. Robertson, M. Bowers, W. Lu, and P. Collon, Nucl. Instrum. and Meth. B, 269 (2011) 721-728
31. "Accelerator mass spectrometry: Current status, new developments, and opportunities with FRIB," P. Collon, Abstracts of papers of the American Chemical Society Volume: 240 Meeting Abstract: 76-NUCL Published: AUG 22 2011
32. "Accelerated Beams for art forensics," P. Collon and M. Wiescher, Phys. Today 65(1), 58 (2012).
33. "A Shorter  $^{146}\text{Sm}$  Half-Life Measured and Implications for  $^{146}\text{Sm}$ - $^{142}\text{Nd}$  Chronology in the Solar System," N. Kinoshita, M. Paul, Y. Kashiv, P. Collon, C. M. Deibel, B. DiGiovine, J. P. Greene, D. J. Henderson, C. L. Jiang, S. T. Marley, T. Nakanishi, R. C. Pardo, K. E. Rehm, D. Robertson, R. Scott, C. Schmitt, X. D. Tang, R. Vondrasek, A. Yokoyama, Science 335, 1614 (2012)
34. "Toward Laser Ablation Accelerator Mass Spectrometry of Actinides," R.C. Pardo, F.G. Kondev, S. Kondrashev, C. Nair, T. Palchan, R. Scott, D. Seweryniak, R. Vondrasek, M. Paul, P. Collon, C. Deibel, G. Youinou, M. Salvatores, G. Palmotti, J. Berg, J. Fannesbeck, G. Imel, Accepted for publication, Nucl. Instr. And Meth. (2012)
35. "First experimental results of the  $^{33}\text{S}(\alpha,p)^{36}\text{Cl}$  cross section for production in the early Solar System," M. Bowers, P. Collon, Y. Kashiv, W. Bauder, K. Chamberlin, W. Lu, D. Robertson, C. Schmitt, Accepted for publication, Nucl. Instr. And Meth. (2012)
36. "Zr-Nb isobar separation experiments for future  $^{93}\text{Zr}$  AMS," W. Lu, P. Collon, Y. Kashiv, M. Bowers, D. Robertson, C. Schmitt, Accepted for publication, Nucl. Instr. And Meth. (2012)
37. "New Measurement of the Astrophysically Important  $^{44}\text{Ca}(\alpha,\gamma)^{44}\text{Ti}$  Reaction," D. Robertson, J. Goerres, P. Collon, and M. Wiescher, Accepted for publication, Phys. Rev. C (2012)

38. “Reducing Potassium Contamination For AMS Detection OF  $^{39}\text{Ar}$  With An Electron-Cyclotron-Resonance Ion Source,” P. Collon, M. Bowers, F. Calaprice, C. Galbiati, D. Henderson, T. Hohman, C. L. Jiang, W. Kutschera, H. Y. Lee, B. Loer, R. C. Pardo, M. Paul, E. Rehm, D. Robertson, C. Schmitt, R. Scott, R. Vondrasek, Accepted for publication, Nucl. Instr. And Meth. (2012)
39. “Measurements of fusion cross-sections in  $^{12}\text{C} + ^{12}\text{C}$  at low beam energies using a particle- $\gamma$  coincidence technique”, C.L. Jiang, K.E.Rehm, X.Fang, X.D.Tang, M.Alcorta, B.B.Back, B.Bucher, P.Collon, C.M. Deibel, B.DiGiovine, J.P.Greene, D.J.Henderson, R.V.F.Janssens, T.Lauritsen, C.J. Lister, S.T.Marley, R.C.Pardo, D.Seweryniak, C.Ugalde, S.Zhu, M.Paul, , Nucl. Instr. And Meth. A, 682 (2012) 446-461
40. “Toward Laser Ablation Accelerator Mass Spectrometry of Actinides”, R.C. Pardo, F.G. Kondev, S. Kondrashev, C. Nair, T. Palchan, R. Scott, D. Seweryniak, R. Vondrasek, M. Paul, P. Collon, C. Deibel, G. Youinou, M. Salvatores, G. Palmotti, J. Berg, J. Fannesbeck, G. Imel, Nucl. Instr. and Meth. B B 294 (2013) 281-286
41. “First experimental results of the  $^{33}\text{S}(\alpha,p)^{36}\text{Cl}$  cross section for production in the early Solar System”, M. Bowers, P. Collon, Y. Kashiv, W. Bauder, K. Chamberlin, W. Lu, D. Robertson, C. Schmitt, Nucl. Instr. and Meth. B 294 (2013) 491-495
42. “Zr-Nb isobar separation experiments for future  $^{93}\text{Zr}$  AMS”, W. Lu, P. Collon, Y. Kashiv, M. Bowers, D. Robertson, C. Schmitt, Nucl. Instr. and Meth. B 294 (2013) 392-396
43. “New AMS method to measure the atom ratio  $^{146}\text{Sm}/^{147}\text{Sm}$  for a half-life determination of  $^{146}\text{Sm}$ ”, N. Kinoshita, M. Paul, M. Alcorta, M. Bowers, P. Collon, C. M. Deibel, B. DiGiovine, S. Goriely, J. P. Greene, D. J. Henderson, C. L. Jiang, Y. Kashiv, B.P. kay, H.Y. Lee, S.T. Marley, T. Nakanishi, R. C. Pardo, N. Patel, K. E. Rehm, D. Robertson, R. Scott, C. Schmitt, X. D. Tang, C. Ugalde, R. Vondrasek, , Nucl. Instrum. And Meth. B 294 (2013) 141-146
44. “Study of the Fusion reaction  $\text{C}^{12}+\text{C}^{12}$  at low beam energy.”, C.L. Jiang, M. Albers, S. Almaraz-Calderon, M. Alcorta, B.B.Back, P. Bertone, B.Bucher, P.Collon, S. Courtin, C.M. Deibel, B.DiGiovine, H. Esbensen, X.Fang, J.P.Greene, F. Haas, D.J.Henderson, R.V.F.Janssens, T.Lauritsen, A. Lefebvre-Schuhl, C.J. Lister, S.T.Marley, R.C.Pardo, M.Paul, K.E.Rehm, D.Seweryniak, X.D.Tang, C.Ugalde, S.Zhu, 11Th International Conference on Nucleus-Nucleus Collisions (NN2012) Journal of Physics Conference Series, 40 (2013) 012120
45. “Measurement of the  $^{33}\text{S}(\alpha,p)^{36}\text{Cl}$  cross section: Implications for production of  $^{36}\text{Cl}$  in the early solar system.”, M. Bowers, Y. Kashiv, W. Bauder, M. Beard, P. Collon, W. Lu, K. Ostdiek, and D. Robertson Phys. Rev. C 88, (2013)065802
46. “The Nuclear Science Laboratory at the University of Notre Dame”, A. Aprahamian, P. Collon, M. Wiescher Laboratory Portrait: Vol. 24, No. 1, 2014 Nuclear Physics News.

47. “Progress of laser ablation for accelerator mass spectrometry at ATLAS utilizing an ECRIS”, R. Scott, T. Palchan, R. Pardo, R. Vondrasek, F. Kondev, O. Nusair, C. Peters, M. Paul, W. Bauder and P. Collon, Prog. Scientific Instr. 85 (2014) 02A901
48. “Accelerator Mass spectrometry at the Nuclear Science Laboratory: Applications to Nuclear Astrophysics”, P. Collon, W. Bauder, M. Bowers, W. Lu, K. Ostdiek and D. Robertson, Physics Procedia (2014) 66 (2015) 481-488
49. “Zr/Nb isobar separation experiment for future  $^{93}\text{Zr}$  AMS measurement”, W. Lu, T. Anderson, M. Bowers, W. Bauder, P. Collon, W. Kutschera, Y. Kashiv, J. Lachner, M. Martschini, K. Ostdiek, D. Robertson, C. Schmitt, M. Skulski, P. Steier, Nucl. Instr. Meth B, In Press (2015) doi:10.1016/j.nimb.2015.01.071
50. “Developing laser ablation in an electron cyclotron resonance ion source for actinide detection with AMS”, W. Bauder, R.C. Pardo, F.G. Kondev, S. Kondrashev, C. Nair, O. Nusair, T. Palchan, R. Scott, D. Seweryniak, R. Vondrasek, P. Collon, M. Paul, Nucl. Instr. Meth B, In Press (2015) doi:10.1016/j.nimb.2015.04.080
51. “Towards a measurement of the half-life of  $^{60}\text{Fe}$  for stellar and early Solar System models”, K. Ostdiek, T. Anderson, W. Bauder, M. Bowers, P. Collon, R. Dressler, J. Greene, W. Kutschera, W. Lu, M. Paul, D. Robertson, D. Schumann, M. Skulski, A. Wallner, Nucl. Instr. Meth B, In Press (2015) doi:10.1016/j.nimb.2015.05.033
52. “Isobar separation of  $^{93}\text{Zr}$  and  $^{93}\text{Nb}$  at 24 MeV with a new multi-anode ionization chamber”, Martin Martschini, Josef Buchriegler, Philippe Collon, Walter Kutschera, Johannes Lachner, Wenting Lu, Alfred Priller, Peter Steier, Robin Golser, , Nucl. Instr. Meth B, In Press (2015) doi:10.1016/j.nimb.2015.03.061
53. “Improved phenomenological description of equilibrium charge state distributions for Ni, Co and Cu ions in Mo based on new experimental data at 2 MeV/u”, P. Gastis, G. Perdikakis, D. Robertson, R. Almus, T. Anderson, W. Bauder, P. Collon, W. Lu, K. Ostdiek, and M. Skulski submitted to Phys. Rev. A <http://arxiv.org/abs/1509.07472>

## Grants received

**University of Notre Dame:** \$390,000 startup, discretionary account

**National Science Foundation** (1 of 4 P.I.s): \$3,900,000 for “*Nuclear Structure and Nuclear Astrophysics*”, 05/01/05 – 04/30/08, Duration: 36 months, #200892

**National Science Foundation:** \$50,000 supplemental to Grant #200892, Duration 05/01/05 – 04/30/06.

**National Science Foundation** (1 of 5 P.I.s): \$3,900,000 for “*Nuclear Structure and Nuclear Astrophysics*”, 07/01/08 – 06/30/11, Proposal # 08030174, Duration: 36 months, #201327

**National Science Foundation** (1 of 5 P.I.’s): \$66,355 supplemental for “*Nuclear Structure and Nuclear Astrophysics*”, 04/15/2008 – 03/31/2009, Proposal # 09030131, Duration 12 Months, # 201327

**National Science Foundation /Department of Energy**, Princeton University (PI: Collon), Title: *Study of Argon for WIMP Dark Matter Detectors and Earth Sciences*, Requested Amt.: \$16,733, Direct Costs: \$13,280, Indirect costs: \$3,453, , Starting Date: 3/1/07 to 02/28/10, Duration: 36 months, #201249

**College of Science, Physics Departments** (PI: Collon), *Acquisition of a new Multi-cathode ion source for the FN tandem accelerator*. Amt: \$81,000

**National Science Foundation** (1 of 5 PI’s): \$2,464,379. MRI: *Acquisition of an Accelerator for Stellar Nucleosynthesis Measurements*, Amt.08/01/2008 – 07/31/2011, Proposal # 08070429 Duration 36 months

**National Science Foundation** (PI): \$470,060 (+\$201,840 ND Cost-Share) MRI: *Development of a New Low Energy High Mass Resolution Beamline for the 11MV Tandem Accelerator*. Proposal # 1337608. Total Award Period Covered: 09/01/13 to 08/31/16

**National Science Foundation** (1 of x P.I.s): \$6,500,500 for “*Nuclear Structure and Nuclear Astrophysics*”, 08/14 – 07/17, Proposal # 1419765, Duration: 36 months,

### Unrefereed Publications and Conference proceedings

1. “Measurement of  $^{81}\text{Kr}$  in the Atmosphere,” P. Collon, B. Davids, M. Fauerbach, H. Friedmann, R. Harkewicz, W. Kutschera, D. Morrissey, R. Pardo, M. Paul, B. Sherrill, and M. Steiner, Progress Report 1997 of the Institut für Radiuforschung und Kernphysik der Universität Wien.
2. “Development of Accelerator Mass Spectrometry (AMS) for the Detection of  $^{81}\text{Kr}$  and first application to groundwater dating,” P. Collon, W. Kutschera, B. Lehmann, H.H. Loosli, R. Purtschert, A. Love, L. Simpson, D. Cole, B. Davids, D.J. Morrissey, B.M. Sherrill, M. Steiner, R. Pardo, and M. Paul, IAEA-SM 361/18 Proceedings from the International Symposium on Isotope Techniques in Water Resources Development and Management, Vienna, 10-14 May 1999.
3. “The Influence of the First Excited  $\frac{1}{2}+$  State in  $^{17}\text{F}$  on the  $^{14}\text{O}(\alpha,p)\text{F}$  Reaction Rate,” B. Harss, C.L. Jiang, K.E. Rehm, J.P. Schiffer, J. Caggiano, P. Collon, J.P. Greene, D. Henderson, A. Heinz, R.V.F. Janssens, J. Nolen, R.C. Pardo, T. Pennington, R.H. Siemssen, I. Wiedenhöver, M. Paul, F. Borasi, R.E. Segel, J. Blackmon, M. Smith,

- A. Chen, and P. Parker, Argonne National Laboratory Physics Division Annual Report 2000, p. 3.
4. "Spin Determination of Particle Unbound States in  $^{18}\text{Ne}$ ," B. Harss, C.L. Jiang, K.E. Rehm, J.P. Schiffer, J. Caggiano, P. Collon, J.P. Greene, D. Henderson, A. Heinz, R.V.F. Janssens, J. Nolen, R.C. Pardo, T. Pennington, R.H. Siemssen, I. Wiedenhöver, M. Paul, F. Borasi, R.E. Segel, J. Blackmon, M. Smith, A. Chen, and P. Parker, Argonne National Laboratory Physics Division Annual Report 2000, p. 5.
  5. "Study of the Branching Ratio of the 4.033 MeV  $J_p = 3/2^+$  State in  $^{19}\text{Ne}$ ," K.E. Rehm, J. Caggiano, P. Collon, A. Heinz, R.V.F. Janssens, C.L. Jiang, R. Pardo, M. Paul, J.P. Schiffer, R.H. Siemssen, A.H. Wuosmaa, L. Jisonna, and R.E. Segal, Argonne National Laboratory Physics Division Annual Report 2000, p. 6.
  6. "Large Angle Alpha Scattering on  $^{44}\text{Ti}$ ," K.E. Rehm, C.L. Jiang, I. Ahmad, J. Caggiano, P. Collon, J.P. Greene, D. Henderson, A. Heinz, R.V.F. Janssens, R.C. Pardo, T. Pennington, R.H. Siemssen, A. Wuosmaa, and M. Paul, Argonne National Laboratory Physics Division Annual Report 2000, p. 7.
  7. "Measurement of  $^{44}\text{Ti}$  Nucleosynthesis by  $\gamma$  and Atom Counting," K.E. Rehm, I. Ahmad, J. Caggiano, P. Collon, J. Greene, D. Henderson, A. Heinz, R.V.F. Janssens, C.L. Jiang, R.C. Pardo, T. Pennington, G. Savard, R. Vondrasek, I. Wiedenhöver, M. Paul, D. Berkovits, J. Goerres, M. Hass, S.K. Hui, and M. Wiescher, Argonne National Laboratory Physics Division Annual Report 2000, p. 9.
  8. "Search for Anomalous Backward Angle Scattering in  $\alpha + ^{44}\text{Ti}$ ," K.E. Rehm, I. Ahmad, J. Caggiano, P. Collon, J.P. Green, A. Heinz, R.V.F. Janssens, C.L. Jiang, M. Paul, J.P. Schiffer, R.H. Siemssen, A. Wuosmaa, and G. Zinkann, Contributed Paper to the International Symposium on Perspectives in Physics with Radioactive Isotope Beams 2000 (RIB00), Hayama, Kanagawa, Japan, November 13-16, 2000.
  9. "Study of the  $^{12}\text{C}(^{11}\text{C},\alpha)^{19}\text{Ne}$  Reaction," A.H. Wuosmaa, K.E. Rehm, J. Caggiano, P. Collon, A. Heinz, D. Jenkins, R.V.F. Janssens, C.L. Jiang, C.J. Lister, J.P. Schiffer, F. Guo, P. McMahan, J. Powell, M. Rowe, and I. Wiedenhöver, Argonne National Laboratory Physics Division Annual Report 2001, p. 4.
  10. "Production and Decay of  $^{257}\text{Rf}$ ," A. Heinz, R.V.F. Janssens, D. Seweryniak, K. Abu Saleem, I. Ahmad, B. Back, M.P. Carpenter, C.N. Davids, J.P. Greene, D.J. Henderson, C.-L. Jiang, T.L. Khoo, F.G. Kondev, T. Lauritsen, C.J. Lister, E.F. Moore, R.C. Pardo, T. Pennington, G. Savard, J.P. Schiffer, R.H. Scott, R.C. Vondrasek, A. Woehr, J. Shergur, P. Collon, and M.B. Smith, Argonne National Laboratory Physics Division Annual Report 2001, p. 43.
  11. "Large Angle Alpha Scattering on  $^{44}\text{Ti}$ ," K.E. Rehm, C.L. Jiang, I. Ahmad, J. Caggiano, P. Collon, J.P. Greene, D. Henderson, A. Heinz, R.V.F. Janssens, R.C. Pardo, T. Pennington, J.P. Schiffer, R.H. Siemssen, A. Wuosmaa, M. Paul, and P. Mohr, Argonne National Laboratory Physics Division Annual Report 2001, p. 47.

12. “Unexpected Behavior of Heavy-Ion Fusion Cross Sections at Extreme Sub-Barrier Energies,” C.L. Jiang, H. Esbensen, K.E. Rehm, B.B. Back, R.V.F. Janssens, J.A. Caggiano, P. Collon, J. Greene, A.M. Heinz, D.J. Henderson, I. Nishinaka, T.O. Pennington, and D. Deweryniak, Argonne National Laboratory Physics Division Annual Report 2001, p. 63.
13. “BaF2 GDR Measurement Collaboration,” B.B. Back, M. Carpenter, P. Collon, A. Heinz, D. Henderson, D. Jenkins, J. Joswick, M. Kelly, T.L. Khoo, F. Kondev, C.J. Lister, T. Pennington, J. Rohrer, R. Siemssen, D. Seweryniak, P. Wilt, V. Nanal, D.J. Hofman, S. Mitsuoka, I. Dioszegi, A. Bracco, F. Camera, M. Halbert, R. Varner, K. Eisenman, P. Heckman, J. Seitz, M. Thoennessen, U. Garg, M. McClintock, and R.J. van Swol, Argonne National Laboratory Physics Division Annual Report 2001, p. 68.
14. “Developing an AMS Counting Technique for  $^{39}\text{Ar}$ ,” Ph. Collon, I. Ahmad, J. Caggiano, C.L. Jiang, A. Heinz, D. Henderson, R.C. Pardo, K.E. Rehm, R.H. Scott, R. Vondrasek, M. Bichler, W.S. Broecker, L. DeWayne Cecil, Y. El Masri, R. Golser, W. Kutschera, B.E. Lehmann, P. Leleux, H.H. Loosli, M. Paul, P. Schlosser, and W.M. Smethie, Jr., Argonne National Laboratory Physics Division Annual Report 2001, p. 79.
15. “Measurement of the  $^3\text{He}$  Component in Isotopically Purified  $^4\text{He}$  by AMS,” R.C. Pardo, A. Heinz, R.V.F. Janssens, C.L. Jiang, K.E. Rehm, J.P. Schiffer, R.H. Scott, R.C. Vondrasek, J.M. Doyle, P. Collon, P.R. Huffman, and D. McKenzie, Argonne National Laboratory Physics Division Annual Report 2001, p. 81.
16. Oceanographers in noble pursuit, Nature News, Published online 21 January 2002, Nature.

## Books

1. P. Collon, D. Robertson, **Analyzers in accelerator mass Spectrometry**, pp. 621-629, In Beauchemin D and Matthews DE, editors. *Elemental and Isotope Ratio Mass Spectrometry*. Elsevier; 2010. 1088p. (Gross ML and Caprioli RM, editors. *The Encyclopedia of Mass Spectrometry*; vol. 5).
2. P. Collon, D. Robertson, **Accelerator Mass Spectrometry in Geophysics and Geochemistry**, pp. 669-677, In Beauchemin D and Matthews DE, editors. *Elemental and Isotope Ratio Mass Spectrometry*. Elsevier; 2010. 1088p. (Gross ML and Caprioli RM, editors. *The Encyclopedia of Mass Spectrometry*; vol. 5).

## Talks and Presentations

1. “Messungen von Kosmogenem  $^{81}\text{Kr}$  in der Atmosphäre,” Fachtagung des Fachausschusses für Kern-und Teilchenphysik, Admont/Steiermark, 17-19 September 1995.

2. "Measurement of  $^{81}\text{Kr}$  in the atmosphere," 7<sup>th</sup> International Conference on Accelerator Mass Spectrometry, Tucson, AZ, May 20-24, 1996.
3. "Development of Accelerator Mass Spectrometry (AMS) for the Detection of  $^{81}\text{Kr}$ ," Presentation at the CRP meeting on Isotope Techniques for the Assessment of Slow Moving Deep Groundwaters and their Potential Application for the Assessment of Waste Disposal Sites, IAEA, October 29, 1997.
4. "First AMS measurement of Cosmogenic  $^{81}\text{Kr}$ ," Presentation at the nuclear physics seminar of the National Superconducting Cyclotron Laboratory, July 14, 1998.
5. "Développement d'une méthode de datation de nappes phréatiques par l'étude du  $^{81}\text{Kr}$  à l'aide d'AMS," Presentation at the Nuclear Physics seminar of the Institut de Physique Nucléaire, Université Catholique de Louvain, April 16, 1999.
6. "Datierung von sehr altem Grundwasser mit Krypton-81," Presentation during the nawitage (Wiener Vorlesungen) organized by the University of Vienna and the City of Vienna, April 20, 1999.
7. "Development of Accelerator Mass Spectrometry (AMS) for the Detection of  $^{81}\text{Kr}$  and first application to groundwater dating," Talk given during a full session of the International Symposium on Isotope Techniques in Water Resources Development and Management, IAEA, Vienna, May 10-14, 1999.
8. " $^{81}\text{Kr}$  in the Great Artesian Basin, Australia: A New Method for Dating Very Old Groundwater," Talk given at the 8<sup>th</sup> International Conference on Accelerator Mass Spectrometry, Palais Auersperg, Vienna, September 6-10, 1999.
9. "The quest for a new  $^{39}\text{Ar}$  counting technique," Seminar given at the Heavy Ion Discussion Group of the Physics Division at Argonne National Laboratory, February 4, 2000.
10. "Accelerator Mass Spectrometry of  $^{39}\text{Ar}$  for Oceanographic Research," Seminar of the Institute for Isotope Research and Nuclear Physics of the University of Vienna, March 8, 2001.
11. "Accelerator Mass Spectrometry of  $^{81}\text{Kr}$  and  $^{39}\text{Ar}$  and Applications to Hydrology and Oceanographic Research," Seminar given at the Scripps Institute of Oceanography, UCSD, La Jolla, April 9, 2001.
12. "Sampling Antarctic Ocean Water for Tritium and Helium Measurements – Techniques Involved and applications to the Western Weddel Sea," Seminar given at the Institute for Isotope Research and Nuclear Physics of the University of Vienna, December 26, 2001.
13. "Helium, Neon and Tritium Measurements in Ocean Water Samples," Seminar given at the Heavy Ion Discussion Group of the Physics Division at Argonne National Laboratory, May 20, 2002.



14. “Accelerator Mass Spectrometry; from detecting nuclides to tracing oceans,” Seminar given at the University of Notre Dame, July 19, 2002.
15. “Tracing the Oceans with  $^{39}\text{Ar}$ ,” Talk given at the 9<sup>th</sup> International Conference on Accelerator Mass Spectrometry, University of Nagoya, Nagoya, Japan, September 9-13, 2002.
16. “Solving the Needle in the Haystack Problem, Recoil Mass Spectrometers,” Talk given at the Working Group Sessions on Stellar Processes of the NeSS 2002 Conference in Washington, D.C., September 19-21, 2002.
17. “Développement d’une méthode AMS pour tracer les courants océaniques à l’aide d’ $^{39}\text{Ar}$ ,” Seminar given at the Institut de Physique Nucleaire de l’Université Catholique de Louvain, December 12, 2002.
18. “Tracing the Oceans with  $^{39}\text{Ar}$ ,” Seminar given at the Institute for Isotope Research and Nuclear Physics of the University of Vienna, December 19, 2002.
19. “RIA and AMS, a wedding of rare isotope counting,” Colloquium given at the University of Notre Dame, January 17, 2003.
20. “RIA and AMS, a wedding of rare isotope counting,” Seminar at the University of Vienna at the Vienna Environmental Research Accelerator, May 22, 2003.
21. Measuring  $^{39}\text{Ar}$ ,  $^{81}\text{Kr}$  and  $^{85}\text{Kr}$  at environmental levels – current “state of the Art,” Seminar at Lamont Doherty Earth Observatory, Columbia University, June 27, 2003.
22. “Accelerator Mass Spectrometry: from nuclear Astrophysics to tracing oceans,” Seminar at the University of Ohio Department of Physics and Astronomy, Edwards Accelerator Laboratory, Athens, OH, May 4, 2004.
23. “Accelerator Mass Spectrometry: another approach to Rare Isotope Physics,” Class given at the RIA Summer School, Argonne National Laboratory, August 13, 2004.
24. “Accelerator Mass Spectrometry: Another Approach to Rare Isotopes Physics,” Invited Talk at the Rare Isotope Accelerator (RIA) 2004 Summer School, Argonne National Laboratory, Argonne, IL, August 8-15, 2004.
25. “Accelerator Mass Spectrometry: From Nuclear Astrophysics to Tracing Oceans,” Physics Colloquium, Western Michigan University, Kalamazoo, October 4, 2004.
26. “Accelerator Mass Spectrometry: From tracing oceans to nuclear astrophysics (and RIA),” Seminar, Department of Physics, Western Michigan University, Kalamazoo, October 4, 2004.
27. “Accelerator Mass Spectrometry: From tracing oceans to nuclear astrophysics,” Seminar, National Superconducting Accelerator Laboratory, Michigan State University, East Lansing, January 19, 2005.

28. "Accelerator Mass Spectrometry for Nuclear Astrophysics on Notre Dame," Class given at the VISTARS 05 Winter School in Russbach, Austria, March 11, 2005.
29. "Accelerator Mass Spectrometry: A powerful tool for nuclear physics," Invited Seminar, Wright Nuclear Structure Laboratory, Yale University, April 13, 2005.
30. "The problems of background reduction for noble-gas AMS in ECR sources," Talk given at the 10<sup>th</sup> International Conference on Accelerator Mass Spectrometry, University of California, Berkeley, September 5-10, 2005.
31. "Accelerator Mass Spectrometry: from tracing oceans to nuclear Astrophysics," Invited Talk at the 2006 Joint Annual Conference of the National Society of Black Physicists and the National Society of Hispanic Physicists, San Jose, CA, February 17, 2006.
32. "Counting nuclei rather than decays: AMS," Invited Talk, VISTARS 2006 Winter School on Nuclear Astrophysics, Russbach, Austria, March 12-19, 2006.
33. "Status of the Gas-Filled magnet upgrade at the NSL," Talk given at the Heavy Ion Discussion Group, Physics Division, Argonne National Laboratory, April 28, 2006.
34. "AMS, From Tracing Oceans to Nuclear Astrophysics," Invited Talk, Annual Summer Meeting of the AAPT, Syracuse, NY, July 22-26, 2006.
35. "The Notre Dame Browne-Buechner Spectrograph in Gas-Filled Mode – AMS for nuclear astrophysics," Seminar, Institut fur Isotopenforschung und Kernphysik der Universitaet Wien, Vienna, Austria, December 21, 2006.
36. "Measurement of the <sup>36</sup>Cl production cross section in X-wind irradiation models," Presentation given at the JINA Frontiers 2007 Workshop, University of Notre Dame, August 19-21, 2007.
37. "MANTIS, in Gas-Filled Mode – AMS for Nuclear Astrophysics at Notre Dame," Talk given at the 2007 Annual Meeting of the Division of Nuclear Physics of NSF, Newport News, VA, October 10-13, 2007.
38. "Measurement of <sup>36</sup>Cl Production cross section in X-Wind Irradiation Models, AMS for Astrophysics," Invited Talk at the 9<sup>th</sup> Torino workshop on Evolution and Nucleosynthesis in AGB Stars & 2<sup>nd</sup> Perugia Workshop in Nuclear Astrophysics, Perugia, Italy, October 22-26, 2007.
39. "Accelerator Mass Spectrometry: From Archeology to Nuclear Astrophysics," Seminar given at the Physics Department of the University of Richmond, VA, November 9, 2007.
40. "Measurement of <sup>39</sup>Ar/Ar ratios using AMS on underground argon samples using the newly developed ultra-pure Al lined plasma chamber," Talk given at the 2008 Annual Fall Meeting of the Division of Nuclear Physics of NSF, Oakland, CA, October 23-26, 2008.

41. “Accelerator Mass Spectrometry: From dating the Ice Man and tracing oceans to the stars,” Invited Colloquium given at the Physics Department of Idaho State University, November 20, 2008.
42. “Re-measuring the Half-life of  $^{60}\text{Fe}$ ,” Talk given at the Joint Meeting of the Nuclear Physics Division of the APS and Physical Society of Japan, HI, October 13-17, 2009.
43. “Producing a well characterized  $^{60}\text{Fe}$  sample,” Talk given at the 11<sup>th</sup> International Conference on Heavy Ion Techniques, HIAT09, Venice, June 9-12, 2009.
44. “Accelerator Mass Spectrometry: Current Status, New Developments and Opportunities with FRIB,” Invited Talk given at the Radiochemistry at FRIB Symposium at the 240<sup>th</sup> National Meeting of the American Chemical Society, Boston, MA, August 22-26, 2010.
45. October 9, 2010, University of Notre Dame College of Science “Football Saturday Science exploration series” The Nuclear Science Laboratory: Probing into the Heart of Stars
46. “Accelerator Mass Spectrometry: A powerful isotope counting technique” Seminar given at Hope College, MI, October 29, 2010.
47. “The nuclear science Laboratory: Probing into the Hart of Stars, opportunities for graduate research” Seminar given at Grove City College, PA, November 2, 2010.
48. “Accelerator Mass Spectrometry: A powerful isotope counting technique” Advanced physics lecture for physics majors given at Grove City College, PA, November 2, 2010.
49. “Accelerator Mass Spectrometry (AMS) for nuclear astrophysics”, National Superconducting Cyclotron Laboratory (NSCL) Colloquium, January 26, 2011
50. “Accelerator Mass Spectrometry at Notre Dame: From Tracing Oceans to Nuclear Astrophysics”, Physics Colloquium given at Indiana University at South Bend, February 25, 2011.
51. “Re-Measuring the half-life of  $^{60}\text{Fe}$ ” Talk given at the Heavy-Ion discussion group of the Physics Division of Argonne National Laboratory, Argonne, IL, September 30, 2011.
52. “Re-Measuring the half-life of  $^{60}\text{Fe}$ ” Talk given at the “Astronomy with Radioactivities VII” workshop, Phillips Island, Australia, March 1-3, 2011, organized by Monash University, Melbourne, Australia.
53. “Re-Measuring the half-life of  $^{60}\text{Fe}$ ” Talk given at the “12<sup>th</sup> International conference on Accelerator Mass Spectrometry” Conference, Wellington, New Zealand, March 21-25, 2011.
54. “Measuring the astrophysically important  $^{40}\text{Ca}(\alpha,\gamma)^{44}\text{Ti}$  reaction with AMS” Talk given at the “12<sup>th</sup> International conference on Accelerator Mass Spectrometry” Conference, Wellington, New Zealand, March 21-25, 2011.

55. “Undergraduate research at the University of Notre Dame”, talk given at the “Conférence Annuelle de l’IN2P3, Université Pierre et Marie Curie, Paris, November 6-9, 2011.
56. “Astronomy with radioactivities” Invited Colloquium given at the Weizmann Institute June 8<sup>th</sup>, 2012
57. “Accelerator Mass Spectrometry at the Nuclear Science Laboratory: Probing into the heart of stars” Invited Colloquium given at the Hebrew University of Jerusalem, June 11<sup>th</sup>, 2012
58. “Accelerator Mass Spectrometry at the Nuclear Science Laboratory: Probing into the heart of stars” talk given at the Heavy Ion Accelerator Symposium, Australian National University, April 8-12, Canberra, Australia, 2013
59. “Using Nuclear techniques to Analyze Art” Invited Talk given May 9<sup>th</sup> 2013, Linda Hall Library, Kansas City, “Art and Science” Lecture series. <https://vimeo.com/66107935>
60. “Nuclear Astrophysics at Notre Dame” From MANTIS to St. George, seminar given at the Vienna Environmental Research laboratory (VERA), University of Vienna, June 17<sup>th</sup> 2013
61. “Using nuclear techniques: From dating the Shroud of Turin and the Ice man to detecting art forgeries and studying stars”, Invited keynote Speaker, Undergraduate Research Annual Meeting, Governor State University, Illinois, April 29 2014
62. “Accelerator Mass Spectrometry(AMS) at the Nuclear Science Laboratory: from art and the environment to stars”, May 29<sup>th</sup> Invited Speaker, 23<sup>rd</sup> International Conference on the Application of Accelerators in Research and Industry (CAARI 2014), May 25<sup>th</sup>-30<sup>th</sup>, 2014 San Antonio, Texas
63. “Using Nuclear techniques to Analyze Art”, Sept 6<sup>th</sup> 2014, pre-Game Football talks Notre Dame COS
64. “Using nuclear techniques: From dating the Shroud of Turin and the Ice man to detecting art forgeries and studying stars”, Colloquium Speaker, Idaho State University, Idaho, November 10 2014
65. Accelerator Mass Spectrometry: From Tracing ocean currents to the life and death of stars. Talk given for the “*Our universe revealed*” lecture series. September 15<sup>th</sup> 2015

66. “Developing Accelerator Based Archaeometry Analysis Techniques at the NSL”  
Colloquium speaker, Ohio University, September 25<sup>th</sup> 2015
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### Visibility

- October 9, 2010, University of Notre Dame College of Science “Football Saturday Science exploration series” The Nuclear Science Laboratory: Probing into the Heart of Stars
- “Probing art and artifacts” Front page of January 2012 Phys Rev. edition
- “Art Theft” Episode 12 of “Crime Inc.” CNBC, First aired Sep. 20<sup>th</sup> 2012 ([http://www.cnbc.com/id/42767515/Crime\\_Inc](http://www.cnbc.com/id/42767515/Crime_Inc))
- American Institute of Physics, Inside Science TV (<http://www.insidescience.org/television>) “Art and Nuclear Astrophysics” released June 15<sup>th</sup> 2012 (<http://www.youtube.com/watch?v=6kDCSAQbtRI>)
- “Using Nuclear techniques to Analyze Art” Invited Talk given May 9<sup>th</sup> 2013, Linda Hall Library, Kansas City, “Art and Science” Lecture series. <https://vimeo.com/66107935>
- “Using Nuclear techniques to Analyze Art”, Sept 6<sup>th</sup> 2014, pre-Game Football talks Notre Dame COS
- “Faculty members use physics to expose art forgery” The Observer Wed. Jan. 25<sup>th</sup> 2012
- “New ion beam research provides links to past” South Bend Tribune, August 13, 2012
- “Detecting Art Forgeries Using Nuclear techniques” Nationally syndicated “Science Friday” radio show with Ira Flatow, ND taping October 17<sup>th</sup> 2014.
- Accelerator Mass Spectrometry: From Tracing ocean currents to the life and death of stars. Talk given for the “*Our universe revealed*” lecture series. September 15<sup>th</sup> 2015
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