

## CURRICULUM VITAE

**Philippe A. Collon**

### Address

Department of Physics  
University of Notre Dame  
Notre Dame, Indiana 46556  
Telephone: 574-631-3540  
Fax: 574-631-5952  
Email: pcollon@nd.edu

### Personal

Citizenship                      Belgium

### 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.

June 1993

Supervisor: Prof. Youssef El Masri  
Licencié en Sciences Physiques – Distinction

Nov. 1993 – Oct. 1999

Universität Wien – Institut Für Radiumforschung und Kernphysik, VERA Laboratory, Vienna, Austria

PhD 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.

July 1999

Supervisor: Prof. Walter Kutschera  
PhD. Thesis defense passed with distinction

### Languages

French, English, German, and Dutch

**Previous Positions**

July 2009 – present	Associate Professor, Physics Department, University of Notre Dame, Notre Dame, Indiana
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.

**Society memberships**

Member:	ÖPG, EPS, BIS, APS
Referee:	Phys. Rev. C
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

**University activities**

Member of Faculty Senate  
 Chair of Student Affair Committee of Faculty Senate  
 Faculty Senate Representative to Student Senate  
 Member of the Advisory Committee to the Provost on the Evaluation of Teaching  
 Ex-Officio Member of the Academic Council

**Graduate Students Advisor:**

Daniel Robertson, Christopher Schmitt, Matthew Bowers, Wenting Lu

**Undergraduate Student Supervisor:** Research experience centers on the upgrade of the 35 ton mass spectrometer as well as the smallest lab accelerator. Both projects are geared towards experimental nuclear astrophysics.

**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

**Publications involving undergraduate research**

1. "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. Pennington, D. Peterson, D. Seweryniak, B. Shumard, S. Sinha, X.D. Tang, I. Tanihata, S. Zhu, P. Collon, S. Kurtz, and M. Paul, *Phys. Rev. C* 71, 044613 (2005).
2. "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. Inst. and Meth. A* 554, 500-513 (2005).

3. "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).
4. "First Results from the Nuclear Astrophysics AMS Program at the NSL Using the MANTIS System in Gas-filled Mode," D. Robertson, P. Collon, D. Henderson, S. Kurtz, L. Lamm, C. Schmitt, B. Shumbard, J. Webb, *Nucl Instr. And Meth. B* (submitted).

### **Honors Theses:**

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:**

1. "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, and J. Wittenbach, *Nucl. Instr. and Meth. B* (in press).
2. "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, submitted to NIM B.
3. "Development of ECR High Purity Liners for Reducing K Contamination for AMS Studies of  $^{39}\text{Ar}$ ," C. Schmitt, Matt Bowers, P. Collon, D. Robertson, D. Henderson, C.-L. Jiang, R. Pardo, E. Rehm, R. Scott, R. Vondrasek, F. Calaprice, C. Galbiati, M. Paul, W. Kutschera, Submitted to *Rev. Sc. Instr.*

## Publications in refereed 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. Wiedenhoefer, 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.* B223, 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. Wraith, 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. “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. Pardo, N. Patel, K.E. Rehm, D. Seweryniak, B. Shumard, X. Wang, S. Zhu, S. Misicu, P. Collon, and X.D. Tang, I. Tanihata, *Phys. Rev. C* 78, 017601 (2008).

### 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 (in press).
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. Segel, 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.

## 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, Arizona, 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, 10-14 May 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, 6-10 September 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, 9-13 September 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., 19-21 September 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, Ohio, 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, Illinois, 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, California, 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, USA, 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, Virginia, November 9, 2007.

40. "Measurement of  $^{39}\text{Ar}/\text{Ar}$  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, California, 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.