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Degrees Attained:

Dr. rer. nat., 2003, Johannes Gutenberg University, Mainz, Germany;
Dipl. Phys., 1996, Johannes Gutenberg University, Mainz, Germany.

Employment History:

Since 2007 Assistant Physicist, Argonne National Laboratory;
2005 – 2007 Named Postdoctoral Fellow, Argonne National Laboratory;
2003 – 2005 Postdoctoral Fellow, Argonne National Laboratory;
2001 – 2003, Visiting Scientist, Argonne National Laboratory;
1997 – 2001, Research Assistant, Johannes Gutenberg University, Mainz, Germany;
1995 – 2001, Teaching Assistant, Johannes Gutenberg University, Mainz, Germany.

Awards:

2005 Willard Frank Libby Postdoctoral Fellowship of Argonne National Laboratory.

Research Interests:

Laser spectroscopy for nuclear structure studies;
Low-energy tests of fundamental symmetries;
Ultra-sensitive trace-isotope analysis.

Publications:Nuclear Charge Radius of ^8He

P. Mueller, I.A. Sulai, A.C.C. Villari, J.A. Alcantara-Nunez, R. Alves-Conde, K. Bailey, G.W.F. Drake, M. Dubois, C. Eleon, G. Gaubert, R.J. Holt, R.V.F. Janssens, N. Lecesne, Z.-T. Lu, T.P. O'Connor, M.-G. Saint-Laurent, J.-C. Thomas, L.-B. Wang
Physical Review Letters **99**, 252501 (2007)

Charge radius and dipole response of ^{11}Li

H. Esbensen, K. Hagino, P. Mueller, and H. Sagawa
Physical Review C **76**, 024302 (2007)

Radiokrypton analysis in the 21st century: Development and application of a laser atom trap

N.C. Sturchio, Z.-T. Lu, P. Mueller, K. Bailey, T.P. O'Connor, R. Yokochi, P. Probst
Geochimica et Cosmochimica Acta **70**, A620 (2006)

Fine Structure of the $1s3p\ ^3P_J$ Level in Atomic ^4He : Theory and Experiment

P. Mueller, L.-B. Wang, G. W. F. Drake, K. Bailey, Z.-T. Lu, T. P. O'Connor
Physical Review Letters **94**, 133001 (2005)

Laser based techniques for ultra trace isotope production, spectroscopy and detection

K.D.A. Wendt, K. Blaum, C. Geppert, P. Müller, W. Nörtershäuser, A. Schmitt, P. Schumann, N. Trautmann, B.A. Bushaw
Hyperfine Interactions **162**, 147 (2005)

Intercomparison Measurements between accelerator and laser based mass spectrometry for ultra-trace determination of ^{41}Ca in the 10^{-11} - 10^{-10} isotopic range

Ch. Geppert, P. Mueller, K. Wendt, Ch. Schnabel, H.-A. Synal, U. Herpers and S. Merchel
Nuclear Instruments and Methods in Physics Research **B229**, 519 (2005)

Laser Spectroscopic Determination of the He-6 Nuclear Charge Radius

L.-B. Wang, P. Mueller, G. W. F. Drake, J. P. Greene, D. Henderson, R. J. Holt, R. V. F. Janssens, C. L. Jiang, Z.-T. Lu, T. P. O'Connor, R. C. Pardo, K. E. Rehm, J. P. Schiffer, X. D. Tang
Physical Review Letters **93**, 142501 (2004)

Searches for stable strangelets in ordinary matter: overview and a recent example

Z.-T. Lu, R. J. Holt, P. Mueller, T. P. O'Connor, J. P. Schiffer, L.-B. Wang
Nuclear Physics A **754**, 361c (2005)

An Atom Trap System for Practical ^{81}Kr -Dating

X. Du, K. Bailey, Z.-T. Lu, P. Mueller, T. P. O'Connor, L. Young
Review of Scientific Instruments **75**, 3224 (2004)

One million year old groundwater in the Sahara revealed by krypton-81 and chlorine-36

N. C. Sturchio, X. Du, R. Purtschert, B. E. Lehmann, M. Sultan, L. J. Patterson, Z.-T. Lu, P. Mueller, K. Bailey, T. P. O'Connor, L. Young, R. Lorenzo, B. M. Kennedy, M. van Soest, Z. El Alfy, B. El Kaliouby, Y. Dawood, and A. M. A. Abdallah
Geophysical Research Letters **31**, L05503 (2004)

Counting individual ^{41}Ca atoms with a Magneto-Optical Trap

I. D. Moore, K. Bailey, J. Greene, Z.-T. Lu, P. Mueller, T. P. O'Connor, Ch. Geppert, K. D. A. Wendt, L. Young
Physical Review Letters **92**, 153002 (2004)

Search for anomalously heavy isotopes of helium in the Earth's atmosphere
P. Mueller, L.-B. Wang, R. J. Holt, Z.-T. Lu, T. P. O'Connor, and J. P. Schiffer
Physical Review Letters **92**, 022501 (2004)

A new method of measuring ^{81}Kr and ^{85}Kr abundances in environmental samples
X. Du, R. Purtschert, K. Bailey, B. E. Lehmann, R. Lorenzo, Z.-T. Lu, P. Mueller, T. P. O'Connor, N.C. Sturchio, and L. Young
Geophysical Research Letters **30**, 2068 (2003).

Laser spectroscopic measurement of helium isotope ratios
L.-B. Wang, P. Mueller, R. Holt, Z.-T. Lu, T.P. O'Connor, Y. Sano, N.C. Sturchio
Geophysical Research Letters **30**, 1592 (2003)

Towards ultrahigh sensitivity analysis of ^{41}Ca
I.D. Moore, K. Bailey, Z.-T. Lu, P. Mueller, T.P. O'Connor, L. Young
Nuclear Instruments and Methods in Physics Research **B204**, 701 (2003)

Towards measuring the charge radius of ^6He and ^8He
P. Mueller, L.-B. Wang, K. Bailey, G.W.F. Drake, X. Du, J. Greene, A.M. Heinz, R.J. Holt, D. Henderson, R.V. Janssens, C.-L. Jiang, C. Law, Z.-T. Lu, I.D. Moore, T.P. O'Connor, R.C. Pardo, M. Paul, T. Pennington, K.E. Rehm, J.P. Schiffer
Nuclear Instruments and Methods in Physics Research **B204**, 536 (2003)

Trace determination of gadolinium in biomedical samples by diode laser-based multi-step resonance ionization mass spectrometry
K. Blaum, Ch. Geppert, W.G. Schreiber, J.G. Hengstler, P. Mueller, W. Noertershaeuser, K. Wendt, B.A. Bushaw
Analytical and Bioanalytical Chemistry **372**, 759 (2002)

Ultra trace isotope determination in environmental, bio-medical and fundamental research by high resolution laser-mass spectrometry
K. Wendt, Ch. Geppert, M. Miyabe, P. Mueller, W. Noertershaeuser, N. Trautmann
Journal of Nuclear Science and Technology **39**, 303 (2002)

Ca-41 ultratrace determination with isotopic selectivity $> 10^{12}$ by diode-laser-based RIMS
P. Mueller, B.A. Bushaw, K. Blaum, S. Diel, Ch. Geppert, A. Nahler, N. Trautmann, W. Noertershaeuser, K. Wendt
Fresenius Journal of Analytical Chemistry **370**, 508 (2001)

First measurements of the calcium-41 tracer signal of skeletal turnover with a compact device
S. Freeman, K. Wendt, P. Mueller, C. Geppert
Journal of Bone and Mineral Research **16**, S346 (2001)

Diode-laser-based Resonance Ionization Mass Spectrometry of the long-lived Radionuclide ^{41}Ca with Abundance Sensitivity $< 10^{-12}$
B. A. Bushaw, W. Noertershaeuser, P. Mueller, K. Wendt

Journal of Radioanalytical and Nuclear Chemistry **247**, 351 (2001)

Trace Detection of ^{41}Ca in Nuclear Reactor Concrete by Diode-laser-based Resonance Ionization Mass Spectrometry

P. Mueller, K. Blaum, B. A. Bushaw, S. Diel, Ch. Geppert, A. Naehler, W. Noertershaeuser, N. Trautmann and K. Wendt

Radiochimica Acta **88**, 487 (2000)

Isotope shifts and hyperfine structure in calcium $4snp\ ^1P_1$ and $4snf\ F$ Rydberg States

P. Mueller, B. A. Bushaw, W. Noertershaeuser, K. Wendt

European Physical Journal **D12**, 33 (2000)

Lineshapes in triple resonance ionization spectroscopy

W. Noertershaeuser, P. Mueller, K. Wendt, B. A. Bushaw

Applied Optics **39**, 5590 (2000)

Selective ultratrace analysis of Ca-41 by laser resonance ionization

K. Wendt, K. Blaum, S. Diel, Ch. Geppert, A. Kuschnik, P. Mueller, N. Trautmann, W. Noertershaeuser, B.A. Bushaw,

Hyperfine Interaction **127**, 519 (2000)

Peak shape for a quadrupole mass spectrometer: comparison of computer simulation and experiment

K. Blaum, Ch. Geppert, P. Mueller, W. Noertershaeuser, K. Wendt, B. A. Bushaw,

International Journal of Mass Spectrometry **202**, 81 (2000)

Isotope shifts and hyperfine structure in the $[\text{Xe}]4f^75d6s^2\ ^9D_J \rightarrow [\text{Xe}]4f^75d6s6d\ ^9F_{J+1}$ transition of gadolinium

K. Blaum, B. A. Bushaw, S. Diel, Ch. Geppert, A. Kuschnik, P. Mueller, W. Noertershaeuser, A. Schmitt, and K. Wendt

European Physical Journal **D11**, 37 (2000)

Laser mass spectrometry for selective ultratrace determination

K. Wendt, K. Blaum, P. Mueller, W. Noertershaeuser, A. Schmitt, N. Trautmann, B. A. Bushaw

Journal of the Korean Physical Society **35**, 143 (1999)

Recent developments in and application of resonance ionization mass spectrometry

K. Wendt, K. Blaum, B.A. Bushaw, C. Gruening, R. Horn, G. Huber, J.V. Kratz, P. Kunz, P. Mueller, W. Noertershaeuser, M. Nunnemann, G. Passler, A. Schmitt, N. Trautmann, A. Waldek

Fresenius Journal of Analytical Chemistry **364**, 471 (1999)

Properties and performances of a quadrupole mass filter used for resonance ionization mass spectrometry

K. Blaum, Ch. Geppert, P. Mueller, W. Noertershaeuser, E.W. Otten, A. Schmitt, N. Trautmann, K. Wendt, and B.A. Bushaw

International Journal of Mass Spectrometry **181**, 67 (1998)

Isotope shift and hyperfine structure in the $3d\ ^2D_2 - 4p\ ^2D_J$ transitions in calcium II

W. Noertershaeuser, K. Blaum, K. Icker, P. Mueller, A. Schmitt, K. Wendt and B. Wiche
European Physical Journal **D2**, 33 (1998)

Rapid trace analysis of $^{89,90}\text{Sr}$ in environmental samples by collinear laser resonance ionization mass spectrometry

K. Wendt, G. K. Bhowmick, G. Herrmann, J. V. Kratz, J. Lantzsch, P. Mueller, W. Noertershaeuser, E.-W. Otten, R. Schwalbach, U.-A. Seibert, N. Trautmann, and A. Waldek
Radiochimica Acta **79**, 183 (1997)

Rapid ultratrace determination of $^{89,90}\text{Sr}$ in environmental samples by collinear laser resonance ionization spectrometry

K. Wendt, J.V. Kratz, J. Lantzsch, P. Mueller, W. Noertershaeuser, A. Seibert, N. Trautmann, A. Waldek, and K. Zimmer
Kerntechnik **62**, 81 (1997)

Invited Talks:*Precision Laser Spectroscopy of Exotic Helium Isotopes*

International Conference on Precision Physics of Simple Atomic Systems, Windsor, Canada, July 2008

Nuclear Charge Radii of ^6He and ^8He

Electron-Nucleus Scattering X, Marciana Marina, Italy, June 2008

Laser Trapping and Probing of Exotic Helium Isotopes

Halo 08 Workshop, Vancouver, Canada, March 2008

Gesellschaft für Schwerionenforschung, Atomic Physics Seminar, Darmstadt, Germany, July 2008

Johannes Gutenberg-Universität, Quantum Seminar, Mainz, Germany, July 2008

Simple Atoms, Extreme Nuclei: Laser Spectroscopy of ^6He and ^8He

Joint Atomic & Nuclear Physics Seminar, University of Maryland, College Park, MD, November 2007

Physics Division Colloquium, Argonne, IL, Nov. 2007

Nuclear Physics Seminar, Indiana University Cyclotron Facility, Bloomington, IN, November 2007

Medium Energy Physics Seminar, University of Illinois, Urbana-Champaign, IL, February 2008

Simple Atoms, Extreme Nuclei – From Precision Atomic Physics to Exotic Nuclear Structure

Physics Colloquium, Western Michigan University, Kalamazoo, MI, October 29th 2007

The Ra EDM Experiment at Argonne & He-8 Charge Radius Measurement at GANIL

Fourth Argonne/INT/MSU/JINA RIA Theory Workshop on Rare Isotopes and Fundamental Symmetries, Institute for Nuclear Theory, University of Washington September 2007

Laser Trapping of Rare Isotopes in Fundamental and Applied Research

3rd Annual DOE Laser Safety Officers Advanced Training Workshop, Argonne, July 2007

Laser Spectroscopy of Light Nuclei

15th International Conference on Electromagnetic Isotope Separators, Deauville, France. June 2007

Laser Spectroscopic Determination of the Nuclear Charge Radii of He-6 and He-8

GANIL – Laboratoire de Physique Corpusculaire Seminar, Caen, France, Feb. 2007

New Opportunities in On-line Laser Spectroscopy: Neutral Atom Traps and an Intense Cf-252 Source

Workshop on Advanced Laser and Mass Spectroscopy, GSI, Darmstadt, Germany, Oct. 2006

Neutral Atom Trapping of Rare Helium Isotopes: He-6 Charge Radius and Beyond

Nuclear Physics Seminar, Indiana University, Bloomington, IN, November 2005

Atom Trap, Krypton-81, and Saharan Water

Physics Colloquium, Wesleyan University, Bloomington, IL, October 2005

Casting Light on Halo Nuclei

APS April Meeting, Tampa, FL, April 2005

One Million Years of Groundwater History Revealed by Atom Trap Trace Analysis of Kr-81

International Conference on Laser Probing, Argonne, IL, October 2004

Atom Trap, Krypton-81, and One Million Year Old Saharan Water

Physics Colloquium, Union College, Schenectady, NY, October 2004

Laser Spectroscopic Determination of the ${}^6\text{He}$ Nuclear Charge Radius

Physics Division Seminar, Argonne National Laboratory, July 2004

Measuring the Charge Radii of ${}^6\text{He}$ and ${}^8\text{He}$ in an Atom Trap

Seminar, National Superconducting Cyclotron Laboratory, MSU, East Lansing, June 2004

Quantum Seminar, Institute of Physics, University of Mainz, May 2004

Atomic Physics Seminar, Gesellschaft fuer Schwerionenforschung (GSI), Darmstadt, Januar 2004

Physics Colloquium, TRIUMF, Vancouver, February 2004

Detecting the Rare and Probing the Exotic with Atom Traps

Physics Seminar, Kernfysisch Versneller Instituut (KVI), Groningen, January 2004

Institutsseminar, Institut fuer Isotopenforschung und Kernphysik, University of Vienna, December 2003