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Degrees Attained:

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

Employment History:

2003 – Present,	Postdoc,	Argonne National Laboratory;
2001 – 2003,	Visiting Scientist,	Argonne National Laboratory;
1997 – 2001,	Research Assistant,	University of Mainz, Germany;
1995 – 2001,	Teaching Assistant,	University of Mainz, Germany.

Research Interests:

Laser spectroscopy of radioactive isotopes;
Ultrasensitive trace-isotope analysis;
Low-energy test of fundamental symmetries.

Publications:

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
submitted to Physical Review Letters

Laser Spectroscopic Determination of the He-6 Nuclear Charge Radius
L.-B. Wang, P. Mueller *et al.*,
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, in print (2004)

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 Alfay, 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 Physical Research **B204**, 701 (2003)

Towards measuring the charge radius of ${}^6\text{He}$ and ${}^8\text{He}$

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 Physical 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 ${}^{41}\text{Ca}$ with Abundance Sensitivity $< 10^{-12}$

B. A. Bushaw, W. Noertershaeuser, P. Mueller, K. Wendt
Journal of Radioanalytical and Nuclear Chemistry **247**, 351 (2000)

Trace Detection of ${}^{41}\text{Ca}$ 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 an K. Wendt
Radiochimica Acta **88**, 487 (2000)

Isotope shifts and hyperfine structure in calcium 4snp ${}^1\text{P}_1$ 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 $[Xe]4f^75d6s^2\ ^9D_J \rightarrow [Xe]4f^75d6s6d\ ^9F_{J+1}$ 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)

Selected Seminars and Talks:

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

4th International Conference on Exotic Nuclei and Atomic Masses, Callaway Gardens, Pine Mountain, Georgia, September 2004, contributed
Physics Division Seminar, Argonne National Laboratory, July 2004, invited

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, invited
Quantum Seminar, Institute of Physics, University of Mainz, May 2004, invited
Atomic Physics Seminar, Gesellschaft fuer Schwerionenforschung (GSI), Darmstadt, Januar 2004, invited
Physics Colloquium, TRIUMF, Vancouver, February 2004, invited

Detecting the Rare and Probing the Exotic with Atom Traps

Physics Seminar, Kernfysisch Versneller Instituut (KVI), Groningen, January 2004, invited
Institutsseminar, Institut fuer Isotopenforschung und Kernphysik, University of Vienna, December 2003, invited

Atom Trap Trace Analysis of Noble Gas Isotopes

14th International Conference on Electromagnetic Isotope Separators and Techniques Related to their Applications, Victoria, May 2002, contributed

Progress in ${}^{41}\text{Ca}$ ultratrace determination by diode-laser-based RIMS

10th Conference on Resonance Ionisation Mass Spectrometry and Applications, Knoxville, 2000, contributed

Isotope shifts and hyperfine structure in calcium ${}^1\text{P}_1$ and ${}^1\text{F}_3$ Rydberg levels

31st Conference of the European Group of Atomic Spectroscopy, Marseille, 1999, contributed

Ultratrace determination of the long-lived isotope ${}^{41}\text{Ca}$ by narrowband cw-RIMS

9th Conference on Resonance Ionization Mass Spectrometry, Manchester, 1998, contributed

Diode-laser RIMS for isotope selective ultratrace analysis of calcium

30th Conference of the European Group of Atomic Spectroscopy, Berlin, 1997, contributed