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Higher Education

Ph.D., Physics, Stony Brook University, (Spring 2008)
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Previous Positions, Academic, Administrative, Professional, and Other

Assistant Professor, (Summer 2014 – present)
Department of Physics
University of Notre Dame, Notre Dame, IN

Research Associate, (Fall 2011 – Summer 2014)
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Postdoctoral Associate, (Summer 2008 – Summer 2011)
A. W. Wright Nuclear Structure Laboratory
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Refereed Publications

Experimental Study of the effective nucleon-nucleon interaction using the $F-21(d,p)F-22$ reaction, J. Chen⁺, C.R. Hoffman, **T. Ahn**, K. Auranen, M.L. Avila, B.B. Back, D.W. Bardayan, D. Blankstein[@], P. Copp, D. Gorelov, B. P. Kay, S. A. Kuvin, J. P. Lai⁺, G. McNeel, P. D. O'Malley⁺, A. M. Rogers, D. Santiago-Gonzales, J. P. Schiffer, J. Sethi, R. Talwar, and J. R. Winkelbauer, Phys. Rev. C 98, 014325 (2018), Impact Factor 3.733

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Roberts[@], A. Shore[@], R. O. Torres-Isea, Nucl. Instr. Meth. A 830, 82 (2016), Impact Factor 1.126

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Simultaneous deorientation and lifetime measurement in ^{98}Ru using the recoil distance Doppler shift method in inverse Coulomb excitation, D. Radeck, V. Werner, G. Ilie, N. Cooper, V. Anagnostatou, **T. Ahn**, L. Bettermann, R. J. Casperson, R. Chevrier, A. Heinz, J. Jolie, D. McCarthy, M. K. Smith, E. Williams, Phys. Rev. C 85, 014301 (2012)

Investigation of octupole vibrational states in ^{150}Nd via inelastic proton scattering ($p, p'\gamma$), M. Elvers, S. Pascu, T. Ahmed, **T. Ahn**, V. Anagnostatou, N. Cooper, C. Deng, J. Endres, P. Goddard, A. Heinz, G. Ilie, E. Jiang, C. Kuppertsbusch, D. Radeck, D. Savran, N. Shenkov, V. Werner, A. Zilges, Phys. Rev. C 84, 054323 (2011)

First g -factor measurements of the 2^+_{1} and the 4^+_{1} states of radioactive ^{100}Pd , D. A. Torres, G. J. Kumbartzki, Y. Y. Sharon, L. Zamick, B. Manning, N. Benczer-Koller, G. Gurdal, K.-H. Speidel, M. Hjorth-Jensen, P. Maier-Komor, S. J. Q. Robinson, **T. Ahn**, V. Anagnostatou, M. Elvers, P. Goddard, A. Heinz, G. Ilie, D. Radeck, D. Savran, V. Werner, Phys. Rev. C 84, 044327 (2011)

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g factors of the low-lying states in ^{106}Pd : Examination of the vibrational character of ^{106}Pd , G. Gürdal, G. J. Kumbartzki, N. Benczer-Koller, Y. Y. Sharon, L. Zamick, S. J. Q. Robinson, **T. Ahn**, R. Casperson, A. Heinz, G. Ilie, J. Qian, V. Werner, E. Williams, R. Winkler, D. McCarthy, Phys. Rev. C 82, 064301 (2010)

Evolution of the mixed-symmetry $2^+_{1,ms}$ quadrupole-phonon excitation from spherical to γ -soft Xe nuclei, L. Coquard, N. Pietralla, G. Rainovski, **T. Ahn**, L. Bettermann, M. P. Carpenter, R. V. F. Janssens, J. Leske, C. J. Lister, O. Möller, W. Rother, V. Werner, and S. Zhu, Phys. Rev. C 82, 024317 (2010)

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Evolution of the one-phonon $2^+_{1,ms}$ mixed-symmetry state in $N=80$ isotones as a local measure for the proton-neutron quadrupole interaction, **T. Ahn**, L. Coquard, N. Pietralla, G. Rainovski, A. Costin, R. V. F. Janssens, C. J. Lister, M. Carpenter, S. Zhu, K. Heyde, Phys. Lett. B 679, 19 (2009); Erratum Phys. Lett. B 682, 490 (2010)

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Lifetime measurement of candidate chiral doublet bands in the $^{103,104}\text{Rh}$ isotopes with the recoil-distance Doppler-shift method in inverse kinematics, T. Suzuki, G. Rainovski, T. Koike, **T. Ahn**, M. P. Carpenter, A. Costin, M. Danchev, A. Dewald, R. V. F. Janssens, P. Joshi, C. J. Lister, O. Moller, N. Pietralla, T. Shinozuka, J. Timar, R. Wadsworth, C. Vaman, S. Zhu, Phys. Rev. C 78, 031302 (2008)

New shell model calculations for ^{40}Ar based on recent g-factor and lifetime measurements, K.-H. Speidel, S. Schielke, J. Leske, N. Pietralla, **T. Ahn**, A. Costin, O. Zell, J. Gerber, P.

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Search for α -Cluster Structure in Exotic Nuclei with the Prototype Active-Target Time-Projection Chamber, A. Fritsch, Y. Ayyad, D. Bazin, S. Beceiro-Novo, J. Bradt, L. Carpenter, M. Cortesi, W. Mittig, D. Suzuki, **T. Ahn**, J. J. Kolata, A. M. Howard, F. D. Becchetti, M. Wolff, JPS Conf. Proc. 14, 021105 (2017)

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High-precision excited state lifetime measurements in rare earth nuclei using $\text{LaBr}_3(\text{Ce})$ detectors, E. Williams, N. Cooper, M. Bonett-Matiz, V. Werner, J.-M. Regis, M. Rudigier, **T. Ahn**, V. Anagnostatou, Z. Berant, M. Bunce, M. Elvers, A. Heinz, G. Ilie, J. Jolie, D. Radeck, D. Savran, M. Smith,

Excited State Lifetime Measurements in Rare Earth Nuclei with Fast Electronics, V. Werner, N. Cooper, M. Bonett-Matiz, E. Williams, J.-M. Regis, M. Rudigier, **T. Ahn**, V. Anagnostatou, Z. Berant, M. Bunce, M. Elvers, A. Heinz, G. Ilie, J. Jolie, D. Radeck, D. Savran, M. Smith, International Nuclear Physics Conference 2010, Journal of Physics: Conference Series 312, 092062 (2011)

Measurements of Picosecond Lifetimes in the Transitional Nucleus ^{100}Pd using the RDDM in Inverse Kinematics, V. Anagnostatou, P. H. Regan, M. R. Bunce, D. McCarthy, V. Werner, **T. Ahn**, R. Casperson, R. Chevrier, N. Cooper, A. Heinz, G. Ilie, M. K. Smith, E. Williams, L. Bettermann, D. Radeck, C. W. Beausang, C. Boniwell, B. Pauerstein, Zakopane Conference in Nuclear Physics, Acta Physica Polonica B B42, 807 (2011)

Chirality in the mass 80 region: ^{79}Kr , T. Koike, S. Kinoshita, Y. Ma, Y. Miura, K. Shirotori, H. Tamura, M. Ukai, T. Suzuki, T. Endo, M. Fujita, Y. Miyashita, M. Ohguma, N. Sato, K. Shinozuka, M. Tateoka, T. Wakui, A. Yamazaki, T. Fukuchi, J. Timar, P. Joshi, **T. Ahn**, G. Rainovski, Y. Y. Fu, International Journal of Modern Physics E20, 520 (2011)

Experimental studies of proton-neutron mixed symmetry states in the mass $A \approx 130$ region, G. Rainovski, N. Pietralla, J. Leske, **T. Ahn**, L. Coquard, C. Bauer, Th. Möller, K. Gladnishki, M. Danchev, A. Damyanova, D. Karagoyozov, R. Topchiyska, C. J. Lister, R. V. F. Janssens, M. P. Carpenter, S. Zhu, *Journal of Physics: Conference Series* 205, 012039 (2010)

Symmetries of Quadrupole-Collective Vibrational Motion in Transitional Even-Even $124\text{--}134\text{Xe}$ Nuclei, N. Pietralla, L. Coquard, G. Rainovski, **T. Ahn**, C. Bauer, J. Leske, O. Möller, T. Möller, *Proceedings of the 12th International Conference on Nuclear Reaction Mechanisms*, Varenna Italy, CERN Proceedings 2010-001 (2010)

Isovector Quadrupole Excitations in the Valence Shell of Vibrational Nuclei, N. Pietralla, **T. Ahn**, M. Carpenter, L. Coquard, R.V. F. Janssens, K. Heyde, K. Lister, J. Leske, G. Rainovski, S. Zhu, *Proc. Nuclear Structure and Dynamics '09*, AIP Conf. Proc. 1165, 225 (2009)

Evolution and shell stabilization of proton-neutron mixed symmetry states in the mass $A \approx 130$ region, G. Rainovski, N. Pietralla, J. Leske, **T. Ahn**, L. Coquard, C. Bauer, T. Möller, C. J. Lister, R. V. F. Janssens, M. P. Carpenter, S. Zhu, *Proceedings of the International Conference Nuclear Structure and Related Topics*, Dubna, Russia, 2, 90 (2009)

Off-yrast collectivity of the $O(6)$ like nucleus ^{124}Xe , G. Rainovski, N. Pietralla, **T. Ahn**, L. Coquard, C.J. Lister, R.V. F. Janssens, M.P. Carpenter, S. Zhu, J. Jolie, *Proc. 13th Intern. Symposium on Capture Gamma-Ray Spectroscopy and Related Topics*, AIP Conf. Proc. 1090, 263 (2009)

Evolution of the one-phonon mixed-symmetry $2^+_{1,ms}$ state in even-even Xe isotopes from inverse-kinematics Coulomb excitation, L. Coquard, **T. Ahn**, G. Rainovski, N. Pietralla, J. Leske, O. Moller, T. Moller, M. Carpenter, R. V. F. Janssens, C. J. Lister, S. Zhu, L. Bettermann, W. Rother, *Proc. 13th Intern. Symposium on Capture Gamma-Ray Spectroscopy and Related Topics*, AIP Conf. Proc. 1090, 140 (2009)

Isovector Quadrupole Excitations in the Valence Shell studied in Projectile Coulomb Excitation, N. Pietralla, G. Rainovski, **T. Ahn**, A. Costin, *Nucl. Phys. A* 788, 85c (2007)

Sensitive Criterion For Chirality; Chiral Doublet Bands In $^{104}\text{Rh}_{59}$, T. Koike, K. Starosta, C. Vaman, **T. Ahn**, D. B. Fossan, R. M. Clark, M. Cromaz, I. Y. Lee, and A. O. Macchiavelli, *AIP Conf. Proc.* 656, 160 (2003)

Other Publications

Testing Valence Proton Symmetry, **T. Ahn**, V. Werner, L. Bettermann[@], R. J. Casperson[@], R. Chevrier[@], A. Heinz, G. Ilie⁺, D. McCarthy[@], N. Pietralla, D. Radeck[@], M. K. Smith^{*}, E. Williams[@], *Phys. Rev. C*, (submitted April 2016), Impact Factor 3.733

Invited Lectures and Addresses

Active-Target TPC's: Advantages, Challenges, and the Future, Nuclear Physics for the Next Generation, Notre Dame London International Gateway, London, United Kingdom (September 2018)

Elastic and Inelastic Scattering with TwinSol Radioactive Beams: Study of Cluster Structure in Light Nuclei, 25th International Conference on the Application of Accelerators in Research and Industry (CAARI), Grapevine, TX (August 2018)

Searching for Cluster Structure in Unstable Nuclei using Active-Target Detectors, Physics Seminar, Korea University, Seoul, South Korea (July 2017)

Search for Clusters in Nuclei, International Doctoral Program Workshop, KU Leuven, Leuven, Belgium (March 2017)

Searching for Clusters in Nuclei using Radioactive Beams and Active Targets, Physics Division Seminar, Argonne National Laboratory, Argonne, IL, (January 2017)

Study of O-14 using resonant alpha scattering, The 2016 R-matrix Workshop on Methods and Applications, Santa Fe, NM, (June 2016)

Search for alpha-cluster states in light-unstable nuclei using the Prototype Active-Target Time Projection Chamber, Physics Division Seminar, Oak Ridge National Laboratory, Oak Ridge, TN (September 2015)

Resonance studies with Active-Target Detectors: Examples from the Prototype Active-Target Time-Projection Chamber, Workshop on Active-Targets and Time-Projection Chambers, East Lansing, MI (May 2015)

The Prototype Active-Target Time-Projection Chamber used with TwinSol Radioactive Ion Beams, The International Conference on Electromagnetic Isotope Separators and Related Topics, Grand Rapids, MI (May 2015)

Moving towards exotic isotopes with the AT-TPC, Nuclear Seminar, Institute for Nuclear Physics Orsay, Orsay, France (January 2013)

Study of Isobaric Analog States in the Sn region with CARIBU and Prototype AT-TPC, Heavy-Ion Discussion, Argonne National Laboratory, Lemont, IL (October 2012)

Road to the AT-TPC, Research Discussions, NSCL, Michigan State University, East Lansing, MI (April 2012)

Probing the Evolution of Collective Excitations in Atomic Nuclei in the $A = 120$ Mass Region, Special Seminar, Michigan State University, East Lansing, MI (September 2011)

Probing the Evolution of Collective Excitations in Atomic Nuclei in the $A = 120$ Mass Region, Seminar, Lawrence Livermore National Laboratory, Livermore, CA (August 2011)

Search for mixed-symmetry states in the $A = 130$ mass region using Coulomb excitation, Nuclear Physics Seminar, A. W. Wright Nuclear Structure Laboratory, Yale University, (January 2008)

Coulomb Excitation of Mixed-Symmetry States, Institut für Kernphysik Oberseminar, Universität zu Köln, Cologne, Germany (May 2006)

Invited Talks at Notre Dame

Exploring the Nuclear Frontier with Radioactive Beams and Active-Target Detectors, Physics Colloquium, University of Notre Dame, Notre Dame IN (February 2014)

Nuclear Structure Studies with the Active-Target Time-Projection Chamber: Moving Towards Exotic Isotopes, Nuclear Physics Seminar, University of Notre Dame, IN (January 2014)

Contributed Talks

Structure Studies with Low-Energy Radioactive Beams from TwinSol: Resonant Scattering and (α, n) Reactions using Active-Targets, 5th Joint Meeting of the Nuclear Physics Divisions of the American Physical Society and the Physical Society of Japan, Waikoloa Village, Kona, HI (October 2018)

Studying Clustering in O-14 and Be-7 using resonant scattering and Coulomb excitation, 10th International Conference on Direct Reactions and Exotic Beams, Matsue, Japan (June 2018)

First Measurement of the $B(E2; 3/2^- \rightarrow 1/2^-)$ in ${}^7\text{Be}$: A Test for Ab-Initio Models, SOTANCP, Galveston, TX (May 2018)

Search for Clustering on the Proton-Rich Side of Stability, TPC Workshop, Santiago de Compostela, Spain (January 2018)

Vertex Reconstruction for the ${}^{10}\text{C}(\alpha, \alpha){}^{10}\text{C}$ scattering reaction using the Prototype Active-Target Time-Projection Chamber, Division of Nuclear Physics Meeting of the American Physical Society, Pittsburgh, PA (October 2017)

Search for Cluster Structure using Radioactive Beams and Active Targets, Institute for Nuclear Theory Workshop, Seattle, WA (March 2017)

Study of the structure of ${}^{14}\text{O}$ using resonant scattering, Division of Nuclear Physics Meeting of the American Physical Society, Vancouver, Canada (October 2016)

Search for alpha cluster states in ${}^{14}\text{O}$ using resonant alpha scattering, Nuclear Structure 2016, Knoxville, TN (July 2016)

Search for novel alpha-clusters in light unstable nuclei, American Physical Society Prairie Meeting, Notre Dame, IN (November 2015)

Search for alpha-cluster structure in ${}^{14}\text{O}$, Division of Nuclear Physics Meeting of the American Physical Society, Santa Fe, NM (October 2015)

Tests and Experiments for the AT-TPC, General Electronics for TPC's General Meeting V, Normandy, France (January 2013)

Increasing gain and dynamic range for active-target time-projection chambers, Division of Nuclear Physics Meeting of the American Physical Society, Newport Beach, CA (October 2012)

Testing Valence-Proton Symmetry for Te and Cd, Division of Nuclear Physics Meeting of the American Physical Society, Santa Fe, New Mexico, (November 2010)

γ -ray spectroscopy of $^{213,214}\text{Th}$ using SASSYER, Third Joint Meeting of the Nuclear Physics Divisions of the American Physical Society and the Physical Society of Japan, Waikoloa, Hawaii, (October 2009)

Recent studies of light Th nuclei at Yale, Workshop: Nuclear Structure Physics Near the Coulomb Barrier, Yale University, New Haven, CT, (June 2009)

Mixed-symmetry states observed in inverse kinematics Coulomb excitation in the $A = 130$ region, German Physical Society Spring Meeting, Gießen, Germany (March 2007)

Measurement of multipole mixing ratios in ^{136}Ce , Workshop: Nuclear Structure Physics Near the Coulomb Barrier, Yale University, New Haven, CT (June 2005)

$E0$ transitions in the confined-beta-soft rotor model, Division of Nuclear Physics Meeting of the American Physical Society, Chicago, IL (October 2004)

Poster Presentations

Searching for Cluster States in Isospin Mirror Nuclei C-14 and O-14 Using Radioactive Beams at TwinSol, Advances in Radioactive Isotope Science, Keystone, CO (May 2017)

Measuring Alpha Scattering Cross Sections with the Prototype Active-Target Time-Projection Chamber, Gordon Conference on Nuclear Chemistry, New London, NH (June 2017)

Active Target Time-Projection Chamber: First Results, Nuclear Structure 2014, Vancouver, Canada (July 2014)

Grants and Sponsored Programs Funded

“MRI: Development of a unique ion trapping system to test the Standard Model of Physics at the Nuclear Science Laboratory”, Co-Principal Investigator, May 2017, (\$824,825)

“Nuclear Physics and Astrophysics”, National Science Foundation, Co-Principal Investigator, July 2017, (\$6,437,909)

Oak Ridge Associated Universities Travel Award, Principal Investigator, June 2015, (\$800)

Postdoctoral Associate Advised

Jianping Lai (Fall 2017-Fall 2018)

Doctoral Students Directed

Samuel Henderson (2020 expected)

Maxime Renaud (2020 expected, jointly advised with Riccardo Raabe, KU Leuven)

Sebastian Aguilar (2021 expected)

Master's Students Directed

Xuyang Li (Spring 2018)

Undergraduate Students Advised

Aidan Tollefson, (REU, Bethel University '20)

Michael Zach Serikow, (Notre Dame '20)

William Jackson, (Notre Dame '20)

Lihao Yan, (Notre Dame, '21)

Lauren Delgado, (REU, Vassar College '20)

Joseph Levano, (Notre Dame '19)

Aaron Rea, (Notre Dame '19)

Sergio Ramirez Martin, (REU, Transylvania University '18)

Kimberly Cushman, (REU, SUNY Oneonta '17)

Louis Jensen, (Notre Dame '17)

James Koci, (Notre Dame '17)

Nicolas Dixneuf, (Notre Dame '16)

Professional Activities

American Physical Society

Referee, Physical Review C, Experimental Nuclear Structure (Spring 2010 - present)