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Higher Education

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Assistant Professor, (Summer 2014 – present)
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Postdoctoral Associate, (Summer 2008 – Summer 2011)
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Refereed Publications

Beam-induced space-charge effects in time projection chambers in low-energy nuclear physics experiments, J. S. Randhawa, M. Cortesi, Y. Ayyad, W. Mittig, **T. Ahn**, D. Bazin, S. Beceiro-Novo, L. Carpenter, K. J. Cook, M. Dasgupta, S. Henderson, D. J. Hinde, J. J. Kolata, J. Sammut, C. Santamaria, N. Watwood, A. Yeck, Nucl. Instr. Methods A 948, 162830 (2019), Impact Factor 1.126

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Hall, J. J. Kolata, A. E. McCoy, S. Moylan, C. S. Reingold, S. Y. Strauss, and R. O. Torres-Isea, Phys. Rev. C 99, 064320 (2019), Impact Factor 3.733

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Study of the spectroscopic factors at $N = 29$ using isobaric analogue resonances in inverse kinematics, J. Bradt[@], Y. Ayyad, D. Bazin, W. Mittig, **T. Ahn**, S. Beceiro Novo, B. A. Brown, L. Carpenter[@], M. Cortesi, M. P. Kuchera, W. G. Lynch, S. Rost, N. Watwood, J. Yurkon, J. Barney, U. Datta, J. Estee, A. Gillibert, J. Manfredi, P. Morfouace, D. Perez-Loureiro, E. Pollaco, J. Sammut, S. Sweany, Phys. Lett. B 788, 155 (2018)

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Nuclear structure investigations of ^{84}Sr and ^{86}Sr using γ -ray spectroscopic methods, H. Duckwitz, P. Petkov, T. Thomas, **T. Ahn**, A. Blazhev, N. Cooper, C. Fransen, M. Hinton, G. Ilie, J. Jolie, V. Werner, Nucl. Phys. A 965, 13 (2017), Impact Factor 2.202

Clusters in Astrophysics, M. Wiescher, **T. Ahn**, International Journal of Modern Physics E, (2017), Impact Factor 1.343

The Prototype Active-Target Time-Projection Chamber used with TwinSol radioactive-ion beams, **T. Ahn**, D. W. Bardayan, D. Bazin, S. Beceiro Novo, F. D. Becchetti, J. Bradt, M. Brodeur, L. Carpenter, Z. Chajecki, M. Cortesi, A. Fritsch, M. R. Hall, O. Hall, L. Jensen, J. J. Kolata, W. Lynch, W. Mittig, P. O'Malley, D. Suzuki, Nucl. Instr. Meth. A 376, 321 (2016), Impact Factor 1.124

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Radeck, T. J. Ross, D. Savran, M. Spieker, V. Werner, and A. Zilges, Phys. Rev. C 92, 064317 (2015), Impact Factor 3.733

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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)

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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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Terry, R. Winkler, E. Williams, J. Qian, A. Schmidt, M. K. Smith, **T. Ahn**, C. W. Beausang, P. H. Regan, T. Ross, M. Bunce, B. Darakchieva, D. A. Meyer, J. LeBlanc, K. Dudziak, C. Bauer, G. Henning, Phys. Rev. C 80, 057303 (2009)

Competition between excited core states and $1h\omega$ single-particle excitations at comparable energies in ^{207}Pb from photon scattering, N. Pietralla, T. C. Li, M. Fritzsche, M. W. Ahmed, **T. Ahn**, A. Costin, J. Enders, J. Li, S. Müller, P. von Neumann-Cosel, I. V. Pinayev, V. Yu. Ponomarev, D. Savran, A. P. Tonchev, W. Tornow, H. R. Weller, V. Werner, Y. K. Wu, A. Zilges, Phys. Lett. B 681 134 (2009)

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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)

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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)

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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. Karagyozov, 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 124–134Xenon 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

Cross section measurements to low lying excited final states of in the $^{24}\text{Mg}(\alpha,p)^{27}\text{Al}^(\gamma)$ reaction as an energy source for X-ray bursts*, **T. Ahn**, S. Aguilar, R. J. deBoer, D. W. Bardayan, A. Boeltzig, C. R. Brune, S. P. Burcher, K. Y. Chae, S. L. Henderson, R. K. Grzywacz, K. L. Jones, J. M. Kovoov, K. T. Macon, K. Manukyan, S. Mosby, P. D. O'Malley, M. Renaud, K. Smith, C. Thornsberry, B. Vande Kolk, M. Wiescher, Physical Review C, (under review), Impact Factor 3.733

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, (under review), Impact Factor 3.733

Invited Lectures and Addresses

Overview of Research Program at Notre Dame Using Active-Target Detectors, Workshop on RI-Beam Spectroscopy by Innovative Gaseous Active Targets, Research Center for Nuclear Physics, Osaka University, Osaka, Japan (December 2019)

Precision Measurements of the $^{24}\text{Mg}(\alpha,p\gamma)^{27}\text{Al}$ and $^{27}\text{Al}(p,\alpha\gamma)^{24}\text{Mg}$ cross sections, The 15th International Symposium on Origin of Matter and Evolution of Galaxies, Kyoto University, Kyoto, Japan (July 2019)

Astrophysics Opportunities using the (P)AT-TPC, Workshop on Nuclear Astrophysics Opportunities at ATLAS, Argonne National Laboratory, Argonne, IL (July 2019)

Nuclear Clustering, Its Impact on Astrophysics and Experimental Search, Physics Seminar, Seoul National University, Seoul, South Korea (May 2019)

Clustering in Nuclei and the Impact of Structure on Astrophysics, Nuclear, Astro, and Particle Physics Seminar, Seoul National University, Seoul, South Korea (December 2018)

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

ND-Cube: An active-target detector for radioactive beam experiments and detector development, Division of Nuclear Physics Meeting of the American Physical Society, Crystal City, VA (October 2019)

First measurement of low-energy resonances in the $^{24}\text{Mg}(\alpha, p\gamma)^{27}\text{Al}$ reaction, American Physical Society April Meeting, Denver, CO (April 2019)

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 ^7Be : 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}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}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}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

Measurement of alpha-induced reactions and secondary gamma rays, Gordon Conference on Nuclear Chemistry, New London, NH (June 2019)

Searching for Cluster States in Isopin 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)

Outreach Presentations and Public Talks

Elements: Journey Through the Stuff of the Universe, One Book One Michiana, North Liberty Library, North Liberty, IN (April 2019)

Nuclear Astrophysics, Physics of Nuclei Summer Program, University of Notre Dame, Notre Dame, IN (June 2018)

What is Physics?, Grace Korean School, Korean Grace Baptist Church, Mishawaka, IN (November 2017)

Exotic Nuclei: Understanding Their Emergent Properties and Applications, Research Experience for Undergraduates Seminar, University of Notre Dame, Notre Dame, IN (June 2015)

Grants and Sponsored Programs Funded

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

“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)

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

Postdoctoral Associates Advised

Shilun Jin (Spring 2019-present)

Jianping Lai (Fall 2017-Fall 2018)

Doctoral Students Advised

Samuel Henderson (2020 expected)

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

Sebastian Aguilar (2021 expected)

Master’s Students Advised

Xuyang Li (Spring 2018)

Undergraduate Students Advised

Adil Mubarak, (REU, University of Minnesota ’21)

Aidan Tollefson, (REU, Bethel University ’19)

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)

Referee, Nuclear Instruments and Methods in Physics Research A (Winter 2018 – present)

Referee, Physics Letters B, Experimental Nuclear Physics (Spring 2019 – present)

Conference Organizer, “Notre Dame-Surrey Conference on Nuclear Physics for the Next Generation”, Notre Dame London Global Gateway, (September 2018), London, United Kingdom