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EDUCATION	Ph.D., Physics, University of Washington, Seattle, 2010-2014. M.Sc., Physics, Sharif University of Technology, Tehran, Iran, 2007-2009. B.Sc., Physics, Sharif University of Technology, Tehran, Iran, 2003-2007.
ACADEMIC APPOINTMENTS	(Tenured) Associate professor, University of Maryland, College Park, 2023-. Fellow, Joint Center for Quantum Information and Computer Science (QuICS), 2023-. (Tenure-Track) Assistant professor, University of Maryland, College Park, 2017-2022. Faculty Research fellow, RIKEN-Brookhaven Research Center, 2017-2020. Post-doctorate research associate, Center for Theoretical Physics, Massachusetts Institute of Technology, 2014-2017.
AWARDS AND RECOGNITIONS	<i>The U.S. Presidential Early Career Award for Scientists and Engineers (PECASE)</i> (2025). <i>Humboldt Research Fellowship for Experienced Researchers</i>, Alexander von Humboldt-Stiftung Foundation (2025). <i>Origins Cluster of Excellence Guest Fellowship</i>, the German Research Foundation and the Technical University of Munich (2025). <i>Simons Emmy Noether Fellowship</i>, Simons Foundation and Perimeter Institute for Theoretical Physics (2024). <i>Sloan Research Fellowship</i>, Alfred Sloan Foundation (2019). <i>Early Career Award</i>, the U.S. Department of Energy, Office of Science (2019). <i>Kenneth Wilson Award</i> for Excellence in Lattice Field Theory. Award citation: “For fundamental contributions to lattice field theory in a finite volume that are essential for performing lattice simulations of complex systems” (2018). <i>Honored faculty</i> at the <i>Maryland Research Excellence Celebration</i>, University of Maryland, College Park (2020, 2023, 2025).
RESEARCH GRANTS	The 2019 <i>Sloan Research Fellowship</i> for a project titled: “Computing Complex Hadronic Processes for Tests of the Standard Model and Searches for New Physics”, award amount: \$70,000, award period: 2019-2021. Department of Energy, Office of Science Early Career Award for a project titled: “Analog and Digital Quantum Simulations of Strongly Interacting Theories for Applications in Nuclear Physics”, award amount: \$750,000, award period: 2019-2024. Department of Energy’s ASCR Quantum Applications Teams for a project titled: “Software Stack and Algorithms for Automating Quantum-Classical Computing”, managed

by the Oak Ridge National Laboratory, PI's share of grant: **\$500,000**, award period: 2018-2022.

Department of Energy's ASCR program in Accelerated Research in Quantum Computing for a project titled: "Fundamental Algorithmic Research for Quantum Computing", managed by Sandia National Laboratory and Oak Ridge National Laboratory, PI's share of grant: **\$310,000**, award period: 2019-2024.

Department of Energy's Office of Science, Office of Nuclear Physics's Program Quantum Horizons: QIS Research and Innovation for Nuclear Science for a project titled: "Approaching QCD with Quantum Simulators and Quantum Computers", PI's share of grant: **\$110,000**, award period: 2020-2023.

National Science Foundation, Quantum Leap Challenge Institute: "Robust Quantum Simulation", PI's share of award: **\$450,000**, award period: 2021-2026.

Department of Energy's Office of Science, Office of Nuclear Physics's Program Quantum Horizons: QIS Research and Innovation for Nuclear Science for a project titled: "Benchmarking Solid-State Quantum Simulators for Applications in Lattice Gauge Theory", PI's share of grant: **\$193,000**, award period: 2023-2026.

Department of Energy's Accelerated Research in Quantum Computing, Fundamental Algorithmic Research toward Quantum Utility (FAR-Qu). PI's share of grant: **\$276,000**, award period: 2024-2029.

Department of Energy's Office of Science, Traineeships in Computational High Energy Physics Program for a project titled: "High Energy Physics Computing Traineeship for Lattice Gauge Theory", PI's share of grant: **\$137,500**, award period: 2023-2027.

National Science Foundation, Focused Research Hubs in Theoretical Physics: "Advancing Theory for Nuclear Double Beta Decays", PI's share of award: **\$292,000**, award period: 2024-2029.

Department of Energy's Office of Science, Office of Nuclear Physics, project title: "Quantum-Simulation Frontiers in Nuclear Physics: From Quantum Field Theories to Nuclear Many-Body Physics", award amount: **\$850,000** (single PI), award period: 2025-2028.

OUTREACH HIGHLIGHTS

Is universe a simulation?, invited panelist of the "2016 Isaac Asimov Memorial Debate", hosted by Neil deGrasse Tyson at the American Museum of Natural History, NYC, NY, April 2016. (The debate has reached **5.8M viewers** on the museum's youtube channel so far and can be viewed [here](#).)

invited scientist and lesson writer of a TED-Ed project featuring the topic of simulating laws of nature, released in 2019. (The lesson has reached **1.5M viewers** on TED-Ed's website so far and can be viewed [here](#).)

PUBLICATIONS AND PREPRINTS

- [1] N. Gupta,, E. Mathew, S. V. Kadam, J. R. Stryker, A. Bapat, N. Mueller, Z. Davoudi, I. Raychowdhury, String-breaking statics and dynamics in a (1+1)D SU(2) lattice gauge theory, arXiv:2509.03586 [quant-ph] (2025).
- [2] Z. Davoudi, Observation of quantum-field-theory dynamics on a spin-phonon quantum computer, arXiv:2509.11477 [quant-ph] (2025), accepted to Nature Physics.
- [3] Z. Davoudi, Quantum simulation of out-of-equilibrium dynamics in gauge theories, arXiv:2509.03586 [quant-ph] (2025), under review at Review of Modern Physics.

- [4] Z. Davoudi, TASI/CERN/KITP Lecture Notes on “Toward Quantum Computing Gauge Theories of Nature”, Eur. Phys. J. Spec. Top. (2026), arXiv:2507.15840 [hep-lat].
- [5] N. Gupta, C. W. White, Z. Davoudi, Euclidean-Monte-Carlo-informed ground-state preparation for quantum simulation of scalar field theory, Phys. Rev. D 113 (2026) 11, 114515, arXiv:2506.02313 [quant-ph].
- [6] Z. Davoudi, C-C. Hsieh, S. V. Kadam, Quantum computation of hadron scattering in a lattice gauge theory, arXiv:2505.20408 [quant-ph] (2025).
- [7] Luo, Surace, De, Lerose, Bennewitz, Ware, Schuckert, Davoudi, Gorshkov, Katz, Monroe, Quantum simulation of bubble nucleation across a quantum phase transition, arXiv:2505.09607 [quant-ph] (2025).
- [8] Z. Davoudi, C. Jarzynski, N. Mueller, G. Oruganti, C. Powers, N. Yunger Halpern, Work and heat exchanged during sudden quenches of strongly coupled quantum systems, Phys. Rev. E 114, 014133 (2026) [Editor’s Suggestion], arXiv:2502.19418 [quant-ph].
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- [10] A. De, A. Lerose, D. Luo, F. M. Surace, A. Schuckert, E. R. Bennewitz, B. Ware, W. Morong, K. S. Collins, Z. Davoudi, A. V. Gorshkov, O. Katz, C. Monroe, Observation of string-breaking dynamics in a quantum simulator, arXiv:2410.13815 [quant-ph] (2024), accepted to Nature Physics.
- [11] N. Mueller, T. Wang, O. Katz, Z. Davoudi, and M. Cetina, Quantum Computing Universal Thermalization Dynamics in a (2+1)D Lattice Gauge Theory, Nature Communications 16, 5492 (2025), arXiv:2408.00069 [quant-ph].
- [12] A. Rad, A. Schuckert, E. Crane, G. Nambiar, F. Fei, J. Wyrick, R. M. Silver, M. Hafezi, Z. Davoudi, M. J. Gullans, Analog Quantum Simulator of a Quantum Field Theory with Fermion-Spin Systems in Silicon, Phys. Rev. D 113 (2026) 9, 094510, arXiv:2407.03419 [quant-ph].
- [13] Z. Davoudi, C. Jarzynski, N. Mueller, G. Oruganti, C. Powers, N. Yunger Halpern, Quantum thermodynamics of nonequilibrium processes in lattice gauge theories, Phys. Rev. Lett. 133, 250402 (2024), arXiv:2404.02965 [quant-ph]. See a story piece about this work at RQS’s website [here](#).
- [14] E. R. Bennewitz, B. Ware, A. Schuckert, A. Lerose, F. M. Surace, R. Belyansky, W. Morong, D. Luo, A. De, K. S. Collins, O. Katz, C. Monroe, Z. Davoudi, A. V. Gorshkov, Simulating Meson Scattering on Spin Quantum Simulators, Quantum 9, 1773 (2025), arXiv:2403.07061 [quant-ph].
- [15] Z. Davoudi, W. Detmold, Z. Fu, A. V. Grebe, W. Jay, D. Murphy, P. Oare, P. E. Shanahan, M. L. Wagman, Long-Distance Nuclear Matrix Elements for Neutrinoless Double-Beta Decay from Lattice QCD, Phys. Rev. D 109 (2024) 11, 114514, arXiv:2402.09362 [hep-lat].
- [16] Z. Davoudi, C-C. Hsieh, S. V. Kadam, Scattering wave packets of hadrons in gauge theories: Preparation on a quantum computer, Quantum 8, 1520 (2024), arXiv:2402.00840 [quant-ph].

- [17] J. D. Watson, J. Bringewatt, A. F. Shaw, A. M. Childs, A. V. Gorshkov, Z. Davoudi, Quantum Algorithms for Simulating Nuclear Effective Field Theories, arXiv:2312.05344 [quant-ph] (2023).
- [18] R. Abbott, W. Detmold, F. Romero-López, Z. Davoudi, M. Illa, A. Parreño, R. J. Perry, P. E. Shanahan, M. L. Wagman, Lattice quantum chromodynamics at large isospin density: 6144 pions in a box, Phys. Rev. D 108 (2023) 11, 114506, arXiv:2307.15014 [hep-lat].
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- [20] C. W. Bauer, Z. Davoudi, N. Klco, M. J. Savage, Quantum simulation of fundamental particles and forces, Nature Rev. Phys. 5 (2023) 7, 420-432, arXiv:2404.06298 [hep-ph].
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- [22] P. Achenbach et al (Z. Davoudi), The Present and Future of QCD: Whitepaper for the 2023 NSAC Long Range Plan, arXiv:2303.02579 [hep-ph].
- [23] D. Beck, J. Carlson, Z. Davoudi, J. Formaggio, S. Quaglioni, M. Savage et al, Quantum Information Science and Technology for Nuclear Physics. Input into U.S. Long-Range Planning (2023), arXiv:2303.00113 [nucl-ex].
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- [25] N. Craig, C. Csaki, A. X. El-Khadra et al (Z. Davoudi), Snowmass Theory Frontier Report (2022), arXiv:2211.05772 [hep-ph].
- [26] A. Lovato et al (Z. Davoudi), Long Range Plan: Dense matter theory for heavy-ion collisions and neutron stars (2022), arXiv:2211.02224 [nucl-th].
- [27] N. Mueller, J. Carolan, A. Connelly, Z. Davoudi, E. Dumitrescu, K. Yeter-Aydeniz, Quantum computation of dynamical quantum phase transitions and entanglement tomography in a lattice gauge theory, PRX Quantum 4 (2023) 3, 030323, arXiv:2210.03089 [quant-ph].
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- [32] V. Cirigliano et al (Z. Davoudi), Towards Precise and Accurate Calculations of Neutrinoless Double-Beta Decay, an NSF Project Scoping Workshop Report, *J. Phys. G: Nucl. Part. Phys.* 49, 120502 (2022), arXiv:2207.01085 [nucl-th].
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- [38] Z. Davoudi, S. Kadam, *On the Extraction of Low-energy Constants of Single- and Double- β Decays from Lattice QCD: A Sensitivity Analysis*, *Phys. Rev. D* 105, no.9, 094502 (2022), arXiv:2111.11599 [hep-lat].
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- from *Lattice Quantum Chromodynamics*, Phys. Rev. D 103, 054508 (2021), arXiv:2009.12357 [hep-lat].
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 - [50] V. Cirigliano, Z. Davoudi, T. Bhattacharya, T. Izubuchi, P. Shanahan, S. Syritsyn, M. Wagman, *The Role of Lattice QCD in Searches for Violations of Fundamental Symmetries and Signals for New Physics*, Eur. Phys. J. A (2019) 55: 197(2019), arXiv:1904.09704 [hep-lat].
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- PHD THESIS [71] Z. Davoudi, *Formal Developments for Lattice QCD with Applications to Hadronic Systems*, Ph.D. thesis, University of Washington, arXiv:1409.1966 [hep-lat] (2014).
- PROCEEDINGS AND [72] Y. Aoki, M. Dalmonte, Z. Davoudi, S. Gottlieb, S. Krieg, and R. Mawhinney, Panel
NEWS ARTICLES Discussion on Future of Computing, PoS LATTICE2025 (2026) 025.
- [73] Z. Davoudi, Quantum Simulation of Gauge Theories for Particle and Nuclear Physics, PoS LATTICE2025 (2026) 018, arXiv:2605.20417 [hep-lat].
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- [78] Z. Davoudi, *Light Nuclei from Lattice QCD: Spectrum, Structure and Reactions*, invited contribution to the proceedings of the “XXII International Conference on Few-Body Problems in Physics”, July 9-13, 2018, Caen, France, arXiv:1902.0495 [hep-lat].
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- [80] Y. Cai and Z. Davoudi, *QED-corrected Lellouch-Lüscher formula for $K \rightarrow \pi\pi$ decay*, contribution to the proceedings of the “36th International Symposium on Lattice Field Theory” (LATTICE2018), 22-28 July, 2018, Michigan State University, East Lansing, MI, USA. arXiv:1812.11015 [hep-lat].
- [81] Z. Davoudi, *Lattice QCD input for nuclear structure and reactions*, invited contribution to the proceedings of the “35th International Symposium on Lattice Field Theory”, Granada, Spain, June 2017, arXiv:1711.02020 [hep-lat].

[82] Z. Davoudi, *Nuclear Physics in the Spotlight: From exploring nature’s most extreme environments to testing its most fundamental symmetries*, invited contribution to the Kavli Institute for Theoretical Physics Newsletter, Spring 2017.

[83] Z. Davoudi, *Two-Baryon Systems with Twisted Boundary Conditions*, PoS LATTICE **2014**, 108 (2014), arXiv: 1411.2010 [hep-lat].

RECENT PROFESSIONAL SERVICE

Associate Director for Education, National Science Foundation’s Institute for Robust Quantum Simulation, University of Maryland, College Park (2023-).

U.S. Nuclear Science Advisory Committee, Department of Energy and National Science Foundation (2024-2025).

The Scientific Program Committee of the USQCD Collaboration (2024-).

The International Advisory Committee of the Lattice-Field-Theory Symposia (2024-).

National Advisory Board of the Department of Energy’s Institute for Nuclear Theory, University of Washington, Seattle (2023-).

Chair of the Local Organizing Committee and the International Advisory Committee of the 43rd International Symposium in Lattice Field theory (2026).

Topical Co-convenor of the U.S. Particle Physics Planning (Snowmass 2021) in Lattice Gauge Theory (2020-2022).

Co-editor of the Snowmass Whitepaper on Quantum Simulation for High-Energy Physics (2022) and of the Quantum Information Science and Technology for Nuclear Physics Whitepaper, input into the U.S. Long-Range Planning (2023).

Reviewer of the U.S. Department of Energy’s Office of Science, National Science Foundation, Swiss National Supercomputing Centre, and UK Royal Society.

Referee of journals *Nature*, *Physical Review X*, *Physical Review Letters*, *PRX Quantum*, *Physical Review D*, *Quantum*, *NPJ Quantum Information*, *Journal of High Energy Physics*, *European Physical Journal A* [distinguished referee], *Europhysics Letters*, and *Philosophical Transactions of the Royal Society A*.

Organizer of the TASI School on “Exploring Fundamental Physics from Colliders to the Cosmos”, University of Colorado, Boulder, CO (2026); the Institute for Nuclear Theory’s program on “Nuclear Hamiltonian for Precision Nuclear Physics and Beyond”, Seattle, WA (2026); the USQCD Collaboration’s all-hands meeting at the University of Maryland, College Park (2025); the Quant-HEP conference on “Quantum Technologies and Computation for High Energy Physics” at the Ludwig Maximilian University of Munich, Munich, Germany (2024); a four-week program on “Quantum Computing Methods for High Energy Physics” at the Munich Institute for Astro-, Particle, and Bio Physics, Garching, Germany (2023); a workshop on “Toward Quantum Advantage in High Energy Physics” by the Munich Institute for Astro-, Particle, and Bio Physics and the Max Planck Institute for Quantum Optics, Garching, Germany (2023); a workshop on “Next-Generation Computing for Low-Energy Nuclear Physics: from Machine Learning to Quantum Computing”, InQubator for Quantum Simulation, Seattle, WA (2022); and a workshop on “Quantum Simulation of Strong Interactions (QuaSI) Workshop 1 & 2, InQubator for Quantum Simulation, Seattle, WA (2021).

EXPERT PANELS

[3] Panel Discussion on *Future of Computing*, the 42nd International Symposium on Lattice Field Theory, Tata Institute for Fundamental Research, Mumbai, India, November 2025.

[2] *Lattice QCD (+EFT) for neutrinoless double-beta decay?*, invited panelist at the virtual workshop on “Neutrinoless double-beta decay beyond tonne-scale”, Center for Fundamental Interactions, University of Massachusetts, Amherst, MA, December 2020.

[1] *Quantum Directions in Nuclear and High-Energy Physics*, invited panelist at the virtual program on “Scientific Quantum Computing and Simulation on Near-Term Devices”, Institute of Nuclear Theory’s (INT), Seattle, WA, November 2020.

SUMMER- AND
WINTER-SCHOOL
LECTURES

[20] *Quantum Simulation of Quantum Field Theories*, **two** invited lectures presented at the 2026 CIQC Winter School on Quantum Simulation University of California, Los Angeles, January 2026.

[19] *Particle scattering from Quantum Computing*, **three** invited lectures presented at the MITP summer school on “Frontiers and Challenges in Lattice Gauge Theory”, Mainz Institute for Theoretical Physics, Mainz, Germany, July 2025.

[18] *Quantum computing gauge theories*, **nine** invited lectures presented at the DTP-TALENT course on “Quantum Computing for Nuclear Physics”, The European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy, June 2025-July 2025.

[17] *Quantum computing QCD: from basics to specifics*, **three** invited lectures presented at the Origins Cluster guest-lecture series, Technical University of Munich, April 2025.

[16] *Finite-volume formalism for lattice QCD*, **three** lectures presented for the (virtual) LGT4HEP Traineeship course, February 2025 and 2026.

[15] *Effective field theories of hadronic and nuclear physics*, **two** lectures presented for the (virtual) LGT4HEP Traineeship course, February 2025 and 2026.

[14] *Foundations of quantum computing for lattice gauge theories*, **four** lectures co-presented for the (virtual) LGT4HEP Traineeship course, November 2024 and 2025.

[13] *Foundations of quantum computing (for Lattice Gauge Theory)*, **four** invited lectures presented at the 2024 CERN school on Continuum Foundations of Lattice Gauge Theory, Geneva, Switzerland, July 2024.

[12] *Quantum Computing for Quantum Field Theories*, **three** invited lectures presented at the 2024 TASI school, Boulder, CO, June 2024.

[11] *Quantum algorithms for simulating nature’s fundamental interactions*, **two** invited lectures presented at the 2024 Short-Term Quantum Algorithms Summer School, Sherbrooke, QC, Canada, June 2024.

[10] *Quantum Simulation of Lattice Gauge Theories*, **three** invited lectures presented at the 2022 EuroPLEX physics school, Benasque, Spain, June 2022.

[9] *Nuclear physics with applications to neutrino physics (lattice)*, **two** invited lectures presented at the 2021 Bad Honnef [virtual] physics school on “Methods of effective field theory and lattice field theory”, Bad Honnef, Germany, August 2021.

- [8] *Quantum Simulation*, **two** invited lectures and **two** problem-solving sessions at the [virtual] summer school on the “Problem Solving Based Lattice QCD Summer School”, Institute for Nuclear Theory, Seattle, WA, June-July, 2021.
- [7] *Nuclear physics and effective (field) theories*, **five** invited lectures presented at the [virtual] Doctoral Training Program on “High-Energy and Nuclear Physics within Quantum Technologies”, European Center for Theoretical Studies in Nuclear Physics (ECT*), Trento, Italy, July 2021.
- [6] *Lattice QCD and nucleon(us) structure*, **three** invited lectures presented at the 2021 National Nuclear Physics [virtual] Summer School, National Autonomous University (Mexico) and Indiana University (USA), June 2021.
- [5] *Lattice QCD and nucleon(us) structure*, **three** invited lectures presented at the first CFNS summer school on the “Physics of the electron-ion collider”, Stony Brook University, Long Island, NY, August 2019.
- [4] *Multi-hadron physics and lattice QCD*, **six** invited lectures presented at the TALENT course on “From Quarks and Gluons to Nuclear Forces and Structure”, ECT*, Trento, Italy, July-August 2019.
- [3] *Topics in lattice QCD for nuclear physics*, **three** invited lectures presented at the school/workshop on “Scattering from the Lattice, Applications and Phenomenology”, Hamilton Mathematics Institute, Trinity College, Dublin, Ireland, May 2018.
- [2] *From QCD to nuclear physics*, **two** invited lectures delivered at the 10th Odense Winter School on Theoretical Physics, CP3-Origins Institute, Odense, Denmark, December 2017.
- [1] *Nuclear forces from lattice QCD*, **one** invited lecture delivered at the TALENT course on “Nuclear forces”, Institute for Nuclear Theory, Seattle, WA, July 2013.

- SEMINARS, TALKS, AND COLLOQUIA [157] *Quantum Computation for Nuclear Physics*, invited talk at the Nuclear Physics at the Quantum and AI Frontiers (NuQAI) workshop, Massachusetts Institute of Technology, Cambridge, MA, August 2026.
- [156] *Toward Quantum Simulating Nature’s Fundamental Particles and Interactions*, invited theory colloquium at the ETH Zurich, Zurich, Switzerland, March 2026.
- [155] *Quantum Simulation of Nonequilibrium Physics of Gauge Theories: From Quantum Thermodynamics and Thermalization to String Breaking and Bubble Nucleation*, invited theory seminar, Max Planck Institute for Quantum Optics, Garching, Germany, March 2026.
- [154] *On Nuclear and High-Energy Physics Applications of Fault-tolerant Quantum Computing*, invited lightning talk at the U.S. National Lab Quantum Computing Roundtable, Rockville, MD, March 2026.
- [153] *Toward Quantum Simulating Nature’s Fundamental Particles and Interactions*, invited seminar at the Department of Physics, Autonomous University of Barcelona, Barcelona, Spain, January 2026.
- [152] *Toward Quantum Simulating Nature’s Fundamental Particles and Interactions*, invited colloquium at the Institut de Ciències del Cosmos, University of Barcelona, Barcelona, Spain, January 2026.

- [151] *Toward quantum simulation of scattering in gauge theories and other strongly correlated systems*, invited talk at the HADNUCMAT workshop, University of Barcelona, Barcelona, Spain, January 2026.
- [150] *Quantum Simulation of Nonequilibrium Dynamics for Nuclear and Particle Physics*, invited physics colloquium, University of North Carolina, Chapel Hill, NC, November 2025.
- [149] *Quantum Simulation of Gauge Theories for Particle and Nuclear Physics: Past, Today, and Future*, invited talk at the 42nd International Symposium on Lattice Field Theory, Tata Institute for Fundamental Research, Mumbai, India, November 2025.
- [148] *Quantum Simulation of Nonequilibrium Dynamics of Gauge Theories for Nuclear Physics*, invited talk at the 2025 Fall Meeting of the American Physical Society (APS), Division of Nuclear Physics (DNP), Chicago, IL, October 2025.
- [147] *Toward Quantum Simulating Nature's Fundamental Particles and Interactions*, invited talk at SQuINT 2025, University of New Mexico, Albuquerque, NM, October 2025.
- [146] *Quantum Simulation of Nonequilibrium Dynamics for Nuclear and Particle Physics*, invited P/T Colloquium, Los Alamos National Laboratory, October 2025.
- [145] *Quantum Simulation of Nonequilibrium Dynamics for Nuclear and Particle Physics*, invited talk at the Year of Quantum Across Canada Symposium, Perimeter Institute and Institute for Quantum Computing, Waterloo, CA, October 2025.
- [144] *How to match lattice QCD and EFT for the $0\nu\beta\beta$ decay amplitudes*, invited talk at the Annual Meeting of the NSF @NDB Hub, University of Notre Dame, South Bend, IN, August, 2025.
- [143] *Toward quantum simulating Nature's fundamental particles and interactions*, invited talk at the QSim conference, New York City, NY, August 2025.
- [142] *Toward quantum computing hadron scattering*, invited talk at the ECT* workshop on "Universality in strongly-interacting systems: from QCD to atoms", June 2025.
- [141] *Toward Quantum Computing Nonequilibrium Phenomena in the Standard Model and Beyond*, invited talk at the CERN Workshop on "Real-time and out-of-equilibrium dynamics in the quantum HEP era", May 2025.
- [140] *Simulating Nature's Fundamental Interactions: From Classical Computations to Quantum Simulations*, invited guest talk at the Origins Cluster, Technical University of Munich, April 2025.
- [139] *Nonequilibrium processes in gauge theories: quantum-thermodynamics, quantum-information, and quantum-simulation perspectives*, invited talk at the SimQuDyn Conference, Ludwig Maximilian University of Munich, April 2025.
- [138] *Quantum simulation for nuclear and particle physics*, invited talk at the "Canada Quantum Days 2025", University of Toronto, Toronto, Canada, February 2025.
- [137] *The joy of quantum computing QCD*, two invited lectures at the "What is Particle Physics?" program at the , Santa Barbara, CA, January 2025.
- [136] *Nonequilibrium processes in gauge theories: A quantum-thermodynamics and quantum-information framework*, invited seminar at Argonne National Laboratory, Chicago, IL,

December 2024.

[135] *Simulating Nature's Fundamental Interactions: From Classical Computations to Quantum Simulations*, invited colloquium at the Physics Department, University of Massachusetts, Amherst, MA, November 2024.

[134] *Toward Quantum Simulating the Strong Force*, invited talk at the Hadrons and Hadron Interactions in QCD 2024 (HHIQCD 2024), Yukawa Institute for Theoretical Physics, Kyoto, Japan, November 2024.

[133] *Quantum computers to aid simulations of fundamental particles and interactions*, invited talk at the The Center for Computational Sciences (CCS) International Symposium, University of Tsukuba, October 2024.

[132] *Quantum thermodynamics, lattice gauge theories, and quantum simulation*, talk at LATTICE 2024, University of Liverpool, UK, July 2024.

[131] *Quantum algorithms for simulating gauge theories of the Standard Model*, invited talk at Google Quantum AI, Seattle, WA, July 2024.

[130] *Fundamental Symmetries (with lattice gauge theory) and Quantum Information Science (for lattice gauge theory)*, two invited talks at the 2024 LQCD and NPPLC Infrastructure Review by the Department of Energy, Rockville, MD, May 2024.

[129] *How to quantum compute non-Abelian gauge theories: Theoretical and algorithmic considerations*, invited seminar at the Institute for Quantum Computing (IQC), Waterloo, Canada, April 2024.

[128] *Quantum simulating hadronic scattering: From confining spin models to gauge theories*, invited seminar at the Physics Department, York University, Toronto, Canada, March 2024.

[127] *Quantum simulating hadronic scattering: From confining spin models to gauge theories*, invited seminar at Centre for Quantum Information and Quantum Control (CQIQC), University of Toronto, Toronto, Canada, March 2024.

[126] *Quantum simulating hadronic scattering: From confining spin models to gauge theories*, invited (virtual) QC-HEP seminar at the Lawrence Berkeley National Laboratory, Berkeley, CA, February 2024.

[125] *How to quantum compute non-Abelian gauge theories: Theoretical and algorithmic considerations*, invited seminar at the Quantum Information Group, Perimeter Institute (PI), Waterloo, Canada, February 2024.

[124] *Simulating Nature's Fundamental Interactions: From Classical Computations to Quantum Simulations*, invited colloquium at the Physics Department, University of Tennessee, Knoxville, TN, October 2023.

[123] *Simulating Nature's Fundamental Interactions: From Classical Computations to Quantum Simulations*, invited colloquium at the Physics Department, Syracuse University, Syracuse, NY, October 2023.

[122] *Uncovering new-physics signals in nucleons and nuclei with lattice QCD*, invited talk at International Conference on Meson-Nucleon Physics and the Structure of the Nucleon (MENU 2023), Institute for Nuclear Physics of the Johannes Gutenberg University of Mainz, Mainz, Germany, September 2023.

- [121] *Simulating Nature’s Fundamental Interactions: From Classical Computations to Quantum Simulations*, invited colloquium at the Physics Department, Louisiana State University, Baton Rouge, LA, September 2023.
- [120] *Quantum computing QCD for hadron structure and dynamics*, invited talk at the 25th International Spin Symposium (SPIN 2023), Duke University, Durham, NC, September 2023.
- [119] *The Path to Constraining Decay Amplitudes from Lattice QCD*, invited talk at the workshop on Lattice QCD and Probes of New Physics, Los Alamos National Laboratory, Santa Fe, NM, August 2023.
- [118] *Theoretical and algorithmic considerations for quantum computing non-Abelian gauge theories*, invited seminar at Deutsches Elektronen-Synchrotron (DESY), Zeuthen, Germany, July 2023. .
- [117] *Classical and quantum Hamiltonian simulation of non-Abelian gauge theories: theoretical and algorithmic considerations*, invited talk at International Quantum Tensor Network: 3rd Plenary Meeting, Technical University of Munich, Raitenhaslach, Germany, July 2023.
- [116] *On the road to quantum simulating QCD*, invited seminar at the RHIC-BES online seminar series, May 2023.
- [115] *Theoretical and algorithmic considerations for quantum computing non-Abelian lattice gauge theories*, invited seminar at the Institute for Theoretical Physics (IFT), Autonomous University of Madrid, Spain, May 2023. .
- [114] *Theoretical and algorithmic considerations for quantum computing non-Abelian lattice gauge theories*, invited talk at the workshop on “Hamiltonian Field Theory for QCD and hadron physics”, Universidad de Granada, Spain, May 2023.
- [113] *Effective strategies and best practices in quantum simulating (non-Abelian) gauge theories*, invited talk at a Task Force Meeting on “Effective gauge theories and topological order”, Ludwig Maximilian University, Munich, Germany, April 2023.
- [112] *Quantum advantage in HEP: Physics drives and the path forward*, opening talk jointly presented by Prof. Michael Spannowsky at the workshop on “Quantum Advantage in High Energy Physics”, Munich Institute for Astro- and Particle Physics (MIAPP) and Max Planck Institute for Quantum Optics, April 2023.
- [111] *Simulating nuclear physics from Nature’s fundamental interactions: From classical computations to quantum simulations*, invited colloquium at the Physics Department, University of Washington, Seattle, WA, March 2023.
- [110] *Simulations of gauge field theories with quantum tools*, invited seminar at the Nuclear Theory group, University of Minnesota, Twin Cities, MN, February 2023.
- [109] *Toward building a quantum-simulation program for QCD*, invited talk presented at the (virtual) QuantHEP Seminar Series, February 2023.
- [108] *Quantum simulation*, talk presented jointly with Dr. Sofia Quaglioni at the Workshop “Quantum Information Science for US Nuclear Physics Long Range Planning”, Santa Fe, NM, January 2023.
- [107] *Hybrid digital-analog quantum simulations (of gauge field theories)*, invited talk at the InQubator for Quantum Simulation (IQUS) workshop: “At the Interface of Quantum

Sensors and Quantum Simulations”, Seattle, WA, November 2022.

[106] *Toward building a quantum-simulation program for QCD*, invited talk at the Fall 2022 Meeting of the APS Division of Nuclear Physics, Topical Workshop on QCD and the EIC, New Orleans, LA, October 2022.

[105] *A Quantum Simulation Program for QCD?*, invited (virtual) seminar at Nuclear Data and Theory and Nuclear and Particle Physics groups at the Lawrence Livermore National Laboratory, Livermore, CA, October 2022.

[104] *Quantum Field Theories with Quantum Tools*, invited (virtual) talk at the Triangle Quantum Seminar Series, North Carolina State University, Raleigh, NC, October 2022.

[103] *Quantum Information Science for QCD Research*, 2022 DNP’s Town Hall meeting on hot and cold QCD, Massachusetts Institute of Technology, Cambridge, MA, September 2022.

[102] *A quantum simulation program for QCD?*, invited keynote talk at the International Conference on Recent Progress in Many-Body Theories XXI, University of North Carolina, Chapel Hill, NC, September 2022.

[101] *The quantum world of quarks and gluons on a quantum simulator?*, Physics Colloquium, University of Maryland, College Park, MD, September 2022.

[100] *Quantum simulation for QCD: Where we are now and what is in reach*, invited (virtual) plenary talk at the XVth Quark Confinement and the Hadron Spectrum Conference, University of Stavanger, Norway, August 2022.

[99] *Uncovering new physics signals in nucleons and nuclei with lattice QCD*, invited colloquium at the Snowmass Community Study Conference, University of Washington, Seattle, WA, July 2022.

[98] *Quantum simulation: Applications in High Energy Physics*, invited talk co-presented at the Snowmass Community Study Conference, University of Washington, Seattle, WA, July 2022.

[97] *Gauge theories, trapped ions, and NISQ-era simulation strategies*, invited talk at the Munich Center for Quantum Science and Technology’s annual conference, Sonthofen, Germany, July 2022.

[96] *Enhancing trapped-ion simulator toolkit for simulating quantum field theories*, invited talk at the workshop on “New trends in complex quantum systems dynamics 2022 San Sebastian”, Basque Country, Spain, June 2022.

[97] *Simulating QCD with quantum tools?*, invited talk at the 7th Annual GPMFC Workshop on Exploring Physics With Quantum-Enabled Precision Measurement, APS DAMOP Meeting, Orlando, FL, May 2022.

[95] *Trapped ions, gauge theories, and NISQ-era simulation strategies*, invited talk at the workshop on “Simulating Quantum Many-Body Systems on NISQ Computers”, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, Apr 2022.

[94] *The quantum world of quarks and gluons on a quantum simulator?*, invited colloquium at the Physics Department, University of Illinois, Urbana Champaign, Mar 2022.

- [93] *The quantum world of quarks and gluons on a quantum simulator?*, invited seminar at the Physics Department, University of California, Berkeley, Mar 2022.
- [92] *The quantum world of quarks and gluons on a quantum simulator?*, invited colloquium at the Physics Department, Duke University, Feb 2022.
- [91] *Strong-interaction physics and lattice field theory in the era of quantum simulation*, invited virtual colloquium at the Physics Department of Iowa State University, IA, Feb 2022.
- [90] *Lattice QCD, fundamental symmetries, and neutrinoless double beta decay*, invited virtual talk at the 2021 school and workshop on “Aspects of Symmetry” organized by the University of Bonn, Germany, Nov 2021.
- [89] *Lattice QCD and nucleon(us) structure*, invited virtual talk at the Frontiers and Careers workshop within the European Research Conference on on Electromagnetic Interactions with Nucleons and Nuclei, Nov 2021.
- [88] *Quantum simulation with trapped ions with applications to nuclear physics*, invited virtual talk at the EP/NP theory seminar series at Washington University, St. Louis, MO, Oct 2021.
- [87] *Lattice field theory in the era of quantum simulation*, invited virtual HEP/GR colloquium at the Clare Hall, Cambridge University, UK, Oct 2021.
- [86] *Lattice field theory and strong-interaction physics in the era of quantum simulation*, invited virtual colloquium at the Physics Department of Tufts University, MA, Oct 2021.
- [85] *Hybrid analog-digital quantum simulations for quantum field theories*, virtual talk presented at the 38th International Symposium on Lattice Field Theory, Massachusetts’s Institute of Technology, Cambridge, MA, July 2021.
- [84] *Quantum Simulation for Nuclear Physics*, invited virtual talk presented at the workshop on “Perspectives on Quantum Sensing and Computation for Particle Physics”, CERN, Switzerland, July 2021.
- [83] *Quantum field theories with trapped-ion quantum simulators?*, invited virtual talk presented at the workshop “Nuclear Physics Meets Condensed Matter”, at European Center for Theoretical Studies in Nuclear Physics (ECT*), Trento, Italy, July 2021.
- [82] *Extending the Trapped-Ion Simulator Toolkit for Lattice Gauge Theory Simulations*, virtual talk presented at the workshop “QuaSI workshop II: Implementation strategies for gauge theories”, InQubator for Quantum Simulation, Seattle, WA, June 2021.
- [81] *Simulations of gauge field theories with quantum tools*, invited virtual seminar at the Center for Quantum Technologies, National University of Singapore, May 2021.
- [80] *Toward simulating nature from its fundamental laws*, invited virtual talk at the Physics Department, University of Texas, El Paso, TX, May 2021.
- [79] *Simulations of gauge field theories with quantum tools*, invited virtual QI Cambridge seminar, Cambridge University, UK, May 2021.
- [78] *Quantum computing and lattice field theory program*, invited virtual talk at the USQCD’s all-hands meeting hosted by Massachusetts’s Institute of Technology, May 2021.

- [77] *Quantum simulation with trapped ions (for nuclear and high-energy physics)*, invited virtual talk at the APS April Meeting, April 2021.
- [76] *Toward quantum simulations of quantum field theories*, invited virtual seminar at the ARQC Quantum Seminar Series hosted by Applied Physics Laboratory, John Hopkins University, MD, April 2021.
- [75] *Lattice field theory and strong-interaction physics in the era of quantum simulation*, invited virtual Frontiers in Nuclear Physics Colloquium, Institute for Nuclear Theory, Seattle, WA, April 2021.
- [74] *Toward Simulating Laws of Nature*, invited virtual seminar at the Horn Point Laboratory, University of Maryland, MD, February 2021.
- [73] *Atoms and ions as quantum simulators of quarks, gluons, and nuclei?*, invited virtual colloquium, Arizona State University, AZ, January 2021.
- [72] *Hamiltonian simulation of non-Abelian lattice gauge theories: Search for an efficient formulation*, invited virtual talk presented at the workshop on Quantum Computing for Quantum Field Theories, Yukawa Institute for Theoretical Physics, Japan, January 2021.
- [71] *Toward quantum simulation of systems of relevance to nuclear and particle physics*, invited virtual talk presented at the XXVI edition of the annual Christmas workshop at the instituto de física teórica (IFT), Madrid, Spain, December 2020.
- [70] *Quantum simulators for nuclear and particle physics: progress, challenges, and future*, invited virtual colloquium presented at the Institute for Quantum Computing (IQC), University of Waterloo, Waterloo, Canada, November 2020.
- [69] *Quantum simulators for nuclear physics: progress, challenges, and future*, invited virtual Physics Division Seminar, Argonne National Laboratory, IL, November 2020.
- [68] *Nuclear physics entering a quantum-simulation era: lessons from the past, vision for the future*, invited virtual talk presented at the workshop on “Advances in Many-body Theories: From First-principles Methods to Quantum Computing and Machine Learning”, European Center for Theoretical Studies in Nuclear Physics (ECT*), Trento, Italy, November 2020.
- [67] *Advances in quantum simulation for nuclear physics*, invited virtual talk presented at the Fall Meeting of APS Division of Nuclear Physics, Michigan State University, East Lansing, MA, October 2020.
- [66] *Towards analog quantum simulations of quantum field theories*, virtual talk presented at the QSFS workshop on “Trapped Ions and Quantum Simulation”, August 2020.
- [65] *Toward matching double-beta decay amplitudes in effective field theory to lattice QCD*, invited virtual talk presented at the program on “Beyond-the-Standard-Model Physics with Nucleons and Nuclei”, INT, Seattle, WA, July 2020.
- [64] *Toward analog quantum simulation of lattice gauge theories with trapped ions*, invited virtual seminar presented at Fermi National Laboratory, Department of Theoretical Physics, IL, April 2020.
- [63] *Restorations of infinite-volume and continuum symmetries of spacetime in lattice field theory simulations of nature*, invited talk presented at the workshop on “Structure-

preserving geometric discretization of physical systems”, Princeton Center for Theoretical Science, Princeton, February 2020.

[62] *The road to nuclear physics from Standard Model using lattice QCD*, invited colloquium presented at the physics department, Ohio University, Athens, October 2019.

[61] *(Towards) quantum simulation of field theories for applications in nuclear and particle physics*, invited talk presented at the QuICS Seminars, Joint Center for Quantum Information and Computer Science (QuICS), University of Maryland, September 2019.

[60] *Towards analog quantum simulations of lattice gauge theories with trapped ions*, talk presented at the 2019 fall meeting of the APS division of nuclear physics, Arlington, Virginia, October 2019.

[59] *Computational nuclear physics with the lattice QCD method*, invited talk presented at the workshop on “Bayesian inference in subatomic physics”, Gothenburg University, Gothenburg, Sweden, September 2019.

[58] *Progress in multi-nucleon physics from lattice QCD*, invited talk presented at the Bethe forum in “Multihadron dynamics in a box”, Bethe Center for Theoretical Physics (BCTP), University of Bonn, Germany, September 2019.

[57] *Towards neutrinoless double-beta decay from lattice QCD*, invited talk presented at the program on “Advances in lattice gauge theories”, CERN, Switzerland, July 2019.

[56] *Lattice QCD for neutrinoless double-beta decay*, invited talk presented at the workshop on “Progress and challenges in neutrinoless double beta decay”, ECT*, Trento, Italy, July 2019.

[55] *Fundamental symmetries*, talk presented at the “Department of Energy’s review of the USQCD project”, Rockville, MD, July 2019.

[54] *Bound nuclear and hypernuclear systems from lattice QCD*, invited talk presented at the “Bound states in QCD and beyond III” workshop, St. Goar, Germany, April 2019.

[53] *Towards analog and digital quantum simulations of strongly-interacting dynamics*, invited talk presented at the “Nuclear and Particle Seminars”, University of Connecticut, March 2019.

[52] *The road to nuclear physics from the Standard Model*, invited colloquium presented at the Physics department, Duke University, February 2019.

[51] *Towards analog and digital simulations of interactions relevant to nuclear and particle physics*, invited talk presented at the kick-off meeting on pre-pilot program in QC and QIS for nuclear theory, January 2019.

[50] *Nuclear physics from underlying interactions of nature using lattice QCD*, talk presented at the University of Tsukuba, department of Physics, January 2019.

[49] *Nuclear physics from underlying interactions of nature using advanced computing*, invited talk presented at the “International workshop on massively parallel programming for quantum chemistry and physics”, January 2019.

[48] *Nuclear physics and lattice QCD*, invited talk presented at the program on “Interface

of effective field theories and lattice gauge theory”, Munich Institute for Astro- and Particle Physics (MIAPP), November 2018.

[47] *The road to nuclear physics from the Standard Model*, invited colloquium presented at the Physics department, University of Iowa, October 2018.

[46] *Spectrum, reaction and structure of light nuclei from lattice QCD*, invited plenary talk presented at the “9th international workshop on chiral dynamics”, Durham, NC, September 2018.

[45] *Prospect of analog simulations of interactions relevant to nuclear and particle physics with trapped ions*, invited talk presented at the INT workshop on “Advances in Monte Carlo techniques for many-body quantum systems”, Institute for Nuclear Theory, Seattle, WA, August 2018.

[44] *The path from finite to infinite volume: Hadronic observables from lattice QCD*, award presentation at “The 36th international symposium on lattice field theory”, Michigan State University, July 2018.

[43] *Higher moments of parton distribution functions from lattice QCD*, talk presented at “The 36th international symposium on lattice field theory”, Michigan State University, July 2018.

[42] *Light nuclei from lattice QCD: spectrum, structure and reactions*, invited plenary talk presented at “The 22nd international conference in few-body physics”, Caen, France, July 2018.

[41] *From quantum chromodynamics to hypernuclear interactions*, invited plenary talk presented at “The 13th International Conference on Hypernuclear and Strange Particle Physics”, Portsmouth, VA, June 2018.

[40] *Axial properties of nuclei from lattice QCD and EFT*, invited talk presented at the INT workshop on “Fundamental physics with electroweak probes of light nuclei”, Institute for Nuclear Theory, Seattle, WA, June 2018.

[39] *Nuclear and hypernuclear forces from lattice QCD*, invited talk presented at the ECT* workshop on “New ideas in constraining nuclear forces”, European Center for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy, June 2018.

[38] *Standard Model input for nuclear physics*, invited talk presented at “The Joint Science Meeting”, Institute for Advanced Computational Sciences, Stony Brook University, Stony Brook, NY, May 2018.

[37] *Fundamental symmetries and signals for new physics*, invited talk presenting progress report on a planned whitepaper at the “USQCD collaboration’s all-hands meeting”, Fermilab, Batavia, IL, April 2018.

[36] *The road to nuclear physics from Standard Model*, invited colloquium at the Department of Physics, University of Maryland, College Park, April 2018.

[35] *The road from QCD to nuclear double- β decays*, invited talk presented at the Theory Seminar Series, Fermilab, Batavia, IL, April 2018.

[34] *Higher moments of parton distribution functions from lattice QCD*, invited talk at the “Lattice PDF” workshop, University of Maryland, College Park, April 2018.

[33] *Baryon-baryon scattering and nuclear forces from lattice QCD*, invited talk at the

workshop on “Multi-hadron physics from lattice QCD”, Institute for Nuclear Theory, Seattle, WA, February 2018.

[32] *Towards unraveling nuclear and hypernuclear forces from QCD*, invited seminar at the FRIB/NSCL seminar series, Michigan State University, East Lansing, January 2018.

[31] *Double-beta decay processes from lattice quantum chromodynamics*, invited presentation at the mini-Symposium on Nuclear Matrix Element Calculations for Neutrinoless Double-Beta, Fall Meeting of the APS Division of Nuclear Physics, Pittsburgh, Pennsylvania, October 2017.

[30] *Beyond nucleon properties from lattice QCD*, invited presentation at the 11th International Workshop on the Physics of Excited Nucleons, University of South Carolina, Columbia, SC, August 2017.

[29] *Status of LQCD calculations for nuclear and multi-nucleon systems*, invited talk delivered at the “Lattice QCD input for neutrinoless double-beta decay” workshop, Institute for Nuclear Theory, Seattle, WA, July 2017.

[28] *The road to nuclear physics from standard model*, invited seminar delivered at Universitat de Barcelona, Spain, June 2017.

[27] *Lattice QCD input for nuclear structure and reactions*, invited plenary talk at the International Symposium for Lattice Gauge Theory, Granada, Spain, June 24, 2017.

[26] *Nuclear and hypernuclear interactions from QCD*, seminar delivered at MIT’s lattice club, Center for Theoretical Physics, MIT, Cambridge, MA, April 2017.

[25] *The road to nuclear physics from Standard Model*, invited seminar delivered at the Brookhaven National Laboratory, Department of Physics, Long Island, NY, April 2017.

[24] *The road to nuclear physics from Standard Model*, invited colloquium delivered at the Old Dominion University, Department of Physics, Norfolk, VA, March 2017.

[23] *Lattice QCD and few-body observables*, invited talk presented at the Jefferson Laboratory, Theory Group, Newport News, VA, March 2017.

[22] *The road to nuclear physics from Standard Model*, invited talk presented at the University of Connecticut, Department of Physics, Mansfield, CT, March 2017.

[21] *QCD input for nuclear double-beta decays*, invited talk presented at the University of Massachusetts, Department of Physics, Amherst, MA, February 2017.

[20] *The road to nuclear physics from Standard Model*, invited talk presented at the University of Maryland, Department of Physics, College Park, MD, February 2017.

[19] *Can we reliably predict nuclear forces and/or nuclei from QCD?*, invited talk presented at the workshop on “The tower of the effective field theories and the emergence of the nuclear phenomena”, the Commissariat à l’énergie atomique (CEA), Saclay, France, January 2017.

[18] *Neutrinoless double-beta decay: The role of effective field theory and lattice QCD*, invited talk presented at the symposium on “Advances in Effective Field Theories”, Forschungszentrum, Jülich, Germany, November 2016.

[17] *Bottom-Up approach to nuclear physics*, invited talk presented at the “Rising Stars

in Physics” workshop, MIT, Cambridge, MA, October 2016.

[16] *Effective field theory and lattice QCD input for neutrinoless double-beta decay*, invited talk presented at the MIT’s Center for Theoretical Physics, “Nuclear and Particle Theory Seminar”, Cambridge, MA, October 2016

[15] *Neutrinoless double-beta decay: The role of effective field theory and lattice QCD*, invited talk presented at the University of Maryland, Department of Physics, “Nuclear Theory group Seminar”, College Park, MD, September 2016.

[14] *Towards lattice QCD studies of high moments of parton distribution functions*, invited talk presented at the “Spin Conference”, University of Illinois, Urbana Champaign, IL, September 2016.

[13] *LQCD for few-body observables*, invited talk presented at “Frontiers in Nuclear Physics” program, Kavli Institute for Theoretical Physics, Santa Barbara, CA, August 2016.

[12] *Charge radii and higher electromagnetic moments with lattice QCD in nonuniform background fields*, talk presented at the “34th International Symposium on Lattice Field Theory”, University of Southampton, Southampton, UK, July 2016.

[11] *Hadronic observables with QED interactions in a finite volume: classical and quantum views*, invited talk presented at Columbia University, department of Physics, “Theory Group Seminar”, NYC, NY, November 2015.

[10] *Lattice QCD with Background Electromagnetic Fields: Implementation and Applications*, invited talk presented at the “Brookhaven Forum 2015: Great Expectations, a New Chapter”, Brookhaven National Laboratory, Uptown, NY, October 2015.

[9] *Hadronic few-body systems in a finite volume*, invited talk presented at the “Lattice gauge theory for the LHC and beyond” program, Kavli Institute for Theoretical Physics, Santa Barbara, CA, August 2015.

[8] *Single-hadron states in a finite volume in the presence of QED interactions*, invited talk presented at the “Multi-hadron and nonlocal matrix elements in lattice QCD”, a RIKEN-BNL research-center workshop, Brookhaven National Laboratory, Uptown, NY, February 2015.

[7] *Two-baryons systems with twisted boundary conditions*, talk presented at the “32nd International Symposium on Lattice Field Theory”, Columbia University, New York, NY, June 2014.

[6] *Three-body finite-volume formalism for lattice QCD*, invited talk presented at the Institute for Nuclear Theory’s (INT) program “Universality in few-body systems: Theoretical challenges and new directions”, Institute for Nuclear Theory, Seattle, WA, May 2014.

[5] *Finite-volume formalism for lattice QCD: Two-nucleon systems and the deuteron*, invited talk presented at the College of William and Mary, “Nuclear Physics Group Seminar”, Williamsburg, VA, October 2013.

[4] *On the extraction of tensor force from lattice QCD*, the fall meeting of the APS division of nuclear physics, Newport News, VA, October 2013.

[3] *Three-particle scattering amplitudes from a finite volume formalism*, INT workshop on “Nuclear reactions from lattice QCD”, Institute for Nuclear Theory, Seattle, WA,

March 2013.

[2] *Restoration of rotational symmetry from the continuum limit of lattice field theories*, invited talk presented at the INT program on “Lattice QCD studies of excited resonances and multi-hadron systems”, Institute for Nuclear Theory, Seattle, WA, July 2012.

[1] *Coupled-channel systems in a finite volume*, the fall meeting of the APS division of nuclear physics, Newport Beach, CA, October 2012.

PUBLIC TALKS
AND PANELS,
INTERVIEWS, AND
OUTREACH

[21] Interviewed by the Symmetry Magazine for an article titled “Into the quantum realm”. Read [here](#).

[20] *Quantum Simulation for Nuclear and High-Energy Physics*, invited talk presented at “Foundations and Frontiers of Physics Seminar for Physics Graduate Students” at the University of Maryland, College Park, November 2024.

[19] *To share a few excitements of my research*, invited talk presented to the Society of Physics Students (SPS) @UMD, March 2023.

[18] *Toward Simulating Laws of Nature...and Implications for a Simulated Universe*, invited seminar at the Professional Physics Seminar for Undergraduate Students at the University of Maryland, College Park, October 2022.

[17] Invited panelist of the “Dark Matter and Dark Energy Panel” organized by the National Science Foundation at the annual comic convention AwesomeCon, Washington DC, June 2022.

[16] *To share a few excitements of my research*, invited talk presented to the Society of Physics Students (SPS) @UMD, September 2021.

[15] Invited panelist of the “Dark Matter and Dark Energy Panel” organized by the National Science Foundation at the annual comic convention AwesomeCon, Washington DC, August 2021.

[14] *Toward Simulating Laws of Nature...and Implications for a Simulated Universe*, invited virtual talk at the Raytheon Technologies, September 2021.

[13] Interviewed by Emmy-award winning Irish TV and radio presenter, Baz Ashmawy, about the topic of scientific angles to simulation hypothesis, May 2021. Listen [here](#).

[12] *Toward Simulating Laws of Nature...and Implications for a Simulated Universe*, invited virtual public talk at the Reyes Lecture Series, Old Dominion University, VA, March 2021, watch [here](#).

[11] *Toward simulating nature from fundamental particles and interactions*, invited seminar at the Professional Physics Seminar for Undergraduate Students at the University of Maryland, College Park, November 2020.

[10] Interviewed by Paris-based science and technology writer Loïc Hecht for a book on the simulation hypothesis.

[9] Invited speaker at the summer camp for (female) high-school students presenting a talk entitled “*Simulating fundamental particles and forces of nature*”, University of Maryland, College Park, July 2019.

[8] Interviewed by Boston-based science and technology journalist Brian Bergstein for a

piece on “Is the Universe Real?” which was published in Medium.com, February 2019, read [here](#).

[7] Invited speaker of TEDxUMD presenting a talk entitled “*Towards simulating nature From fundamental particles and interactions*”, University of Maryland, College Park, April 2019.

[6] Invited scientist and lesson writer of a TED-Ed project featuring the topic of simulating laws of nature, released in 2019, watch [here](#).

[5] Invited faculty panelist at the graduate students advising session at the “36th International Symposium on Lattice Field Theory” (LATTICE2018), 22-28 July, 2018, Michigan State University, East Lansing, MI, USA.

[4] *From QCD to nuclear physics*, invited seminar at the “Foundations and Frontiers of Physics Seminar for Physics Graduate Students” at the University of Maryland, College Park, February 2018.

[3] *Simulating fundamental particles and forces of nature...and why I like it!*, invited seminar at the Professional Physics Seminar for Undergraduate Students at the University of Maryland, College Park, October 2017.

[2] *Is universe a simulation?*, invited panelist of the “2016 Isaac Asimov Memorial Debate”, hosted by Neil deGrasse Tyson at the American Museum of Natural History, NYC, NY, April 2016, watch [here](#).

[1] *Universe as a numerical simulation?*, invited public talk presented at the Art Institute of Seattle, Seattle, WA, January 2013.

LANGUAGES

Farsi (Native)

English (Fluent)