

USQCD Publications—2021

66. M. Illa [NPLQCD], “Towards robust constraints on nuclear effective field theory from lattice QCD,” *PoS LATTICE2021*, 378 (2022) [[arXiv:2112.14226 \[hep-lat\]](#)].
65. S. Lahert *et al.* [Fermilab Lattice, HPQCD and MILC], “Hadronic vacuum polarization of the muon on 2+1+1-flavor HISQ ensembles: an update.,” *PoS LATTICE2021*, 526 (2022) [[arXiv:2112.11647 \[hep-lat\]](#)].
64. J. Flynn, R. Hill, A. Juettner, A. Soni, J. T. Tsang and O. Witzel, “Form factors for semileptonic $B \rightarrow \pi$, $B_s \rightarrow K$ and $B_s \rightarrow D_s$ decays,” *PoS LATTICE2021*, 306 (2022) [[arXiv:2112.10580 \[hep-lat\]](#)].
63. K. F. Liu, “Status on lattice calculations of the proton spin decomposition,” *AAPPS Bull.* **32**, 8 (2022) [[arXiv:2112.08416 \[hep-lat\]](#)].
62. H. W. Lin, “Nucleon helicity generalized parton distribution at physical pion mass from lattice QCD,” *Phys. Lett. B* **824**, 136821 (2022) [[arXiv:2112.07519 \[hep-lat\]](#)].
61. J. Dodson, S. Bhattacharya, K. Cichy, M. Constantinou, A. Metz, A. Scapellato and F. Steffens, “First Lattice QCD Study of Proton Twist-3 GPDs,” *PoS LATTICE2021*, 054 (2022) [[arXiv:2112.05538 \[hep-lat\]](#)].
60. A. Salas-Chavira, Z. Fan and H. W. Lin, “First glimpse into the kaon gluon parton distribution using lattice QCD,” *Phys. Rev. D* **106**, 094510 (2022) [[arXiv:2112.03124 \[hep-lat\]](#)].
59. X. Gao, A. D. Hanlon, S. Mukherjee, P. Petreczky, P. Scior, S. Syritsyn and Y. Zhao, “Lattice QCD determination of the Bjorken- x dependence of parton distribution functions at next-to-next-to-leading order,” *Phys. Rev. Lett.* **128**, 142003 (2022) [[arXiv:2112.02208 \[hep-lat\]](#)].
58. B. Yoon, C. C. Chang, G. T. Kenyon, N. T. T. Nguyen and E. Rrapaj, “Prediction and compression of lattice QCD data using machine learning algorithms on quantum annealer,” *PoS LATTICE2021*, 143 (2021) [[arXiv:2112.02120 \[hep-lat\]](#)].
57. H. T. Ding, W. P. Huang, M. Lin, S. Mukherjee, P. Petreczky and Y. Zhang, “Correlated Dirac eigenvalues around the transition temperature on $N_\tau = 8$ lattices,” *PoS LATTICE2021*, 591 (2022) [[arXiv:2112.00318 \[hep-lat\]](#)].
56. D. Bala, O. Kaczmarek, R. Larsen, S. Mukherjee, G. Parkar, P. Petreczky, A. Rothkopf and J. H. Weber, “The complex potential from 2+1 flavor QCD using HTL inspired approach,” *PoS LATTICE2021*, 199 (2022) [[arXiv:2112.00664 \[hep-lat\]](#)].
55. H. T. Ding, S. T. Li, X. D. Wang, Y. Zhang, A. Tomiya and S. Mukherjee, “Correlated Dirac eigenvalues and axial anomaly in chiral symmetric QCD,” *PoS LATTICE2021*, 619 (2022) [[arXiv:2112.00465 \[hep-lat\]](#)].
54. G. Parkar, D. Bala, O. Kaczmarek, R. Larsen, S. Mukherjee, P. Petreczky, A. Rothkopf and J. H. Weber, “In-medium static quark potential from spectral functions on realistic HISQ ensembles,” *PoS LATTICE2021*, 239 (2022) [[arXiv:2111.15437 \[hep-lat\]](#)].
53. G. Wang *et al.* [χ QCD], “Proton momentum and angular momentum decompositions with overlap fermions,” *Phys. Rev. D* **106**, 014512 (2022) [[arXiv:2111.09329 \[hep-lat\]](#)].

52. C. Morningstar, J. Bulava, A. D. Hanlon, B. Hörz, D. Mohler, A. Nicholson, S. Skinner and A. Walker-Loud, “Progress on meson-baryon scattering,” *PoS LATTICE2021*, 170 (2022) [[arXiv:2111.07755 \[hep-lat\]](#)].
51. W. I. Jay *et al.* [Fermilab Lattice and MILC], “ B - and D -meson semileptonic decays with highly improved staggered quarks,” *PoS LATTICE2021*, 109 (2022) [[arXiv:2111.05184 \[hep-lat\]](#)].
50. A. Scapellato, C. Alexandrou, K. Cichy, M. Constantinou, K. Hadjyiannakou, K. Jansen and F. Steffens, “Generalized parton distributions of the proton from lattice QCD,” *PoS LATTICE2021*, 129 (2022) [[arXiv:2111.03226 \[hep-lat\]](#)].
49. J. S. Yoo, Y. Aoki, P. Boyle, T. Izubuchi, A. Soni and S. Syritsyn, “Proton decay matrix elements on the lattice at physical pion mass,” *Phys. Rev. D* **105**, 074501 (2022) [[arXiv:2111.01608 \[hep-lat\]](#)].
48. C. Egerer *et al.* [HadStruc], “Transversity parton distribution function of the nucleon using the pseudodistribution approach,” *Phys. Rev. D* **105**, 034507 (2022) [[arXiv:2111.01808 \[hep-lat\]](#)].
47. M. Constantinou, S. Bhattacharya, K. Cichy, A. Metz, A. Scapellato and F. Steffens, “First study of twist-3 PDFs for the proton from lattice QCD,” *PoS LATTICE2021*, 391 (2022) [[arXiv:2111.01056 \[hep-lat\]](#)].
46. Z. Fan and H. W. Lin, “Gluon Parton Distribution of the Pion and Nucleon from Lattice QCD,” *PoS LATTICE2021*, 628 (2022) [[arXiv:2110.14471 \[hep-lat\]](#)].
45. D. Bala *et al.* [HotQCD], “Static quark-antiquark interactions at nonzero temperature from lattice QCD,” *Phys. Rev. D* **105**, 054513 (2022) [[arXiv:2110.11659 \[hep-lat\]](#)].
44. E. Wickenden and T. DeGrand, “Approaching the chiral and continuum limit of large- N QCD,” *PoS LATTICE2021*, 217 (2022) [[arXiv:2110.10254 \[hep-lat\]](#)].
43. Y. Shamir, M. Golterman, W. I. Jay, E. T. Neil and B. Svetitsky, “ S parameter from a prototype composite-Higgs model,” *PoS LATTICE2021*, 611 (2022) [[arXiv:2110.05198 \[hep-lat\]](#)].
42. B. Yoon, N. T. T. Nguyen, C. C. Chang and E. Rrapaj, “Lossy compression of statistical data using quantum annealer,” *Sci. Rep.* **12**, 3814 (2022) [[arXiv:2110.02142 \[quant-ph\]](#)].
41. T. DeGrand, “Funny business from the large N_c finite temperature crossover,” *PoS LATTICE2021*, 568 (2022) [[arXiv:2109.10337 \[hep-lat\]](#)].
40. C. T. Peterson, A. Hasenfratz, J. van Sickle and O. Witzel, “Determination of the continuous β function of SU(3) Yang-Mills theory,” *PoS LATTICE2021*, 174 (2022) [[arXiv:2109.09720 \[hep-lat\]](#)].
39. A. Hasenfratz, Y. Shamir and B. Svetitsky, “Taming lattice artifacts with Pauli-Villars fields,” *Phys. Rev. D* **104**, 074509 (2021) [[arXiv:2109.02790 \[hep-lat\]](#)].
38. R. Zhang, T. Bhattacharya, R. Gupta, H. W. Lin, S. Mondal, S. Park and B. Yoon, “Strange and charm contributions to nucleon charges and moments,” *PoS LATTICE2021*, 498 (2022) [[arXiv:2109.01191 \[hep-lat\]](#)].
37. C. Alexandrou, K. Cichy, M. Constantinou, K. Hadjyiannakou, K. Jansen, A. Scapellato and F. Steffens, “Transversity GPDs of the proton from lattice QCD,” *Phys. Rev. D* **105**, 034501 (2022) [[arXiv:2108.10789 \[hep-lat\]](#)].

36. T. J. Hou, J. Liang, K. F. Liu, M. Yan and C. P. Yuan, “Connected and disconnected sea partons from CT18 parametrization of PDFs,” *SciPost Phys. Proc.* **8**, 067 (2022) [[arXiv:2108.06768 \[hep-ph\]](#)].
35. X. Feng, L. Jin and M. J. Riberdy, “Lattice QCD calculation of the pion mass splitting,” *Phys. Rev. Lett.* **128**, 052003 (2022) [[arXiv:2108.05311 \[hep-lat\]](#)].
34. N. Juliano, R. Zhang, C. Honkala and H. W. Lin, “Pion distribution amplitudes in the continuum limit,” *PoS LATTICE2021*, 436 (2022) [[arXiv:2108.04326 \[hep-lat\]](#)].
33. S. Bhattacharya, K. Cichy, M. Constantinou, A. Metz, A. Scapellato and F. Steffens, “Twist-3 partonic distributions from lattice QCD,” *SciPost Phys. Proc.* **8**, 057 (2022) [[arXiv:2107.12818 \[hep-lat\]](#)].
32. S. Meinel and G. Rendon, “Charm-baryon semileptonic decays and the strange Λ^* resonances: New insights from lattice QCD,” *Phys. Rev. D* **105**, L051505 (2022) [[arXiv:2107.13084 \[hep-ph\]](#)].
31. S. Meinel and G. Rendon, “ $\Lambda_c \rightarrow \Lambda^*(1520)$ form factors from lattice QCD and improved analysis of the $\Lambda_b \rightarrow \Lambda^*(1520)$ and $\Lambda_b \rightarrow \Lambda_c^*(2595, 2625)$ form factors,” *Phys. Rev. D* **105**, 054511 (2022) [[arXiv:2107.13140 \[hep-lat\]](#)].
30. P. Shanahan, M. Wagman and Y. Zhao, “Lattice QCD calculation of the Collins-Soper kernel from quasi-TMDPDFs,” *Phys. Rev. D* **104**, 114502 (2021) [[arXiv:2107.11930 \[hep-lat\]](#)].
29. D. Bollweg *et al.* [HotQCD], “Second order cumulants of conserved charge fluctuations revisited: Vanishing chemical potentials,” *Phys. Rev. D* **104**, 074512 (2021) [[arXiv:2107.10011 \[hep-lat\]](#)].
28. D. A. Pefkou, D. C. Hackett and P. E. Shanahan, “Gluon gravitational structure of hadrons of different spin,” *Phys. Rev. D* **105**, 054509 (2022) [[arXiv:2107.10368 \[hep-lat\]](#)].
27. T. Khan *et al.* [HadStruc], “Unpolarized gluon distribution in the nucleon from lattice quantum chromodynamics,” *Phys. Rev. D* **104**, 094516 (2021) [[arXiv:2107.08960 \[hep-lat\]](#)].
26. C. Egerer *et al.* [HadStruc], “Towards high-precision parton distributions from lattice QCD via distillation,” *JHEP* **11**, 148 (2021) [[arXiv:2107.05199 \[hep-lat\]](#)].
25. M. Mai *et al.* [GWQCD], “Three-Body dynamics of the $a_1(1260)$ resonance from lattice QCD,” *Phys. Rev. Lett.* **127**, 222001 (2021) [[arXiv:2107.03973 \[hep-lat\]](#)].
24. S. Bhattacharya, K. Cichy, M. Constantinou, A. Metz, A. Scapellato and F. Steffens, “Parton distribution functions beyond leading twist from lattice QCD: The $h_L(x)$ case,” *Phys. Rev. D* **104**, 114510 (2021) [[arXiv:2107.02574 \[hep-lat\]](#)].
23. C. Alexandrou, M. Constantinou, K. Hadjyiannakou, K. Jansen and F. Manigrasso, “Flavor decomposition of the nucleon unpolarized, helicity, and transversity parton distribution functions from lattice QCD simulations,” *Phys. Rev. D* **104**, 054503 (2021) [[arXiv:2106.16065 \[hep-lat\]](#)].
22. T. Appelquist *et al.* [Lattice Strong Dynamics (LSD)], “Goldstone boson scattering with a light composite scalar,” *Phys. Rev. D* **105**, 034505 (2022) [[arXiv:2106.13534 \[hep-ph\]](#)].
21. A. Bazavov *et al.* [Fermilab Lattice and MILC], “Semileptonic form factors for $B \rightarrow D^* \ell \nu$ at nonzero recoil from 2 + 1-flavor lattice QCD,” *Eur. Phys. J. C* **82**, 1141 (2022) [[arXiv:2105.14019 \[hep-lat\]](#)].
20. J. Karpie *et al.* [HadStruc], “The continuum and leading twist limits of parton distribution functions in lattice QCD,” *JHEP* **11**, 024 (2021) [[arXiv:2105.13313 \[hep-lat\]](#)].

19. R. Gupta, S. Park, M. Hoferichter, E. Mereghetti, B. Yoon and T. Bhattacharya, “Pion-nucleon sigma term from lattice QCD,” *Phys. Rev. Lett.* **127**, 24 (2021) [[arXiv:2105.12095 \[hep-lat\]](#)].
18. Z. Fan and H. W. Lin, “Gluon parton distribution of the pion from lattice QCD,” *Phys. Lett. B* **823**, 136778 (2021) [[arXiv:2104.06372 \[hep-lat\]](#)].
17. K. F. Liu, “Proton mass decomposition and hadron cosmological constant,” *Phys. Rev. D* **104**, 076010 (2021) [[arXiv:2103.15768 \[hep-ph\]](#)].
16. L. Liu *et al.* [χ QCD], “Nucleon isovector scalar charge from overlap fermions,” *Phys. Rev. D* **104**, 094503 (2021) [[arXiv:2103.12933 \[hep-lat\]](#)].
15. S. Meinel and G. Rendon, “ $\Lambda_b \rightarrow \Lambda_c^*(2595, 2625)\ell^- \bar{\nu}$ form factors from lattice QCD,” *Phys. Rev. D* **103**, 094516 (2021) [[arXiv:2103.08775 \[hep-lat\]](#)].
14. S. Bassler, J. Laiho, M. Schiffer and J. Unmuth-Yockey, “The de Sitter instanton from Euclidean dynamical triangulations,” *Phys. Rev. D* **103**, 114504 (2021) [[arXiv:2103.06973 \[hep-lat\]](#)].
13. S. Park *et al.* [Nucleon Matrix Elements (NME)], “Precision nucleon charges and form factors using (2+1)-flavor lattice QCD,” *Phys. Rev. D* **105**, 054505 (2022) [[arXiv:2103.05599 \[hep-lat\]](#)].
12. P. Boyle and A. Yamaguchi, “Comparison of domain wall fermion multigrid methods,” [[arXiv:2103.05034 \[hep-lat\]](#)].
11. P. X. Ma, X. Feng, M. Gorchtein, L. C. Jin and C. Y. Seng, “Lattice QCD calculation of the electroweak box diagrams for the kaon semileptonic decays,” *Phys. Rev. D* **103**, 114503 (2021) [[arXiv:2102.12048 \[hep-lat\]](#)].
10. G. Bergner and D. Schaich, “Eigenvalue spectrum and scaling dimension of lattice $\mathcal{N} = 4$ supersymmetric Yang-Mills,” *JHEP* **04**, 260 (2021) [[arXiv:2102.06775 \[hep-lat\]](#)].
9. X. Gao, N. Karthik, S. Mukherjee, P. Petreczky, S. Syritsyn and Y. Zhao, “Pion form factor and charge radius from lattice QCD at the physical point,” *Phys. Rev. D* **104**, 11 (2021) [[arXiv:2102.06047 \[hep-lat\]](#)].
8. L. Gayer *et al.* [Hadron Spectrum], “Isospin- $\frac{1}{2}$ $D\pi$ scattering and the lightest D_0^* resonance from lattice QCD,” *JHEP* **07**, 123 (2021) [[arXiv:2102.04973 \[hep-lat\]](#)].
7. M. Dai, J. Laiho, M. Schiffer and J. Unmuth-Yockey, “Newtonian binding from lattice quantum gravity,” *Phys. Rev. D* **103**, 114511 (2021) [[arXiv:2102.04492 \[hep-lat\]](#)].
6. A. Parreño *et al.* [NPLQCD], “Axial charge of the triton from lattice QCD,” *Phys. Rev. D* **103**, 074511 (2021) [[arXiv:2102.03805 \[hep-lat\]](#)].
5. X. Gao, K. Lee, S. Mukherjee, C. Shugert and Y. Zhao, “Origin and resummation of threshold logarithms in the lattice QCD calculations of PDFs,” *Phys. Rev. D* **103**, 094504 (2021) [[arXiv:2102.01101 \[hep-ph\]](#)].
4. T. DeGrand, “Finite temperature properties of QCD with two flavors and three, four and five colors,” *Phys. Rev. D* **103**, 094513 (2021) [[arXiv:2102.01150 \[hep-lat\]](#)].
3. X. Gao, N. Karthik, S. Mukherjee, P. Petreczky, S. Syritsyn and Y. Zhao, “Towards studying the structural differences between the pion and its radial excitation,” *Phys. Rev. D* **103**, 094510 (2021) [[arXiv:2101.11632 \[hep-lat\]](#)].

2. T. Bhattacharya, V. Cirigliano, R. Gupta, E. Mereghetti and B. Yoon, “Contribution of the QCD Θ -term to the nucleon electric dipole moment,” *Phys. Rev. D* **103**, 114507 (2021) [[arXiv:2101.07230 \[hep-lat\]](#)].
1. G. Silvi, S. Paul, C. Alexandrou, S. Krieg, L. Leskovec, S. Meinel, J. Negele, M. Petschlies, A. Pochinsky and G. Rendon, *et al.* “ P -wave nucleon-pion scattering amplitude in the $\Delta(1232)$ channel from lattice QCD,” *Phys. Rev. D* **103**, 094508 (2021) [[arXiv:2101.00689 \[hep-lat\]](#)].

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