Lu, Xianguo 卢显国

Employment

2023	Associate Professor, Department of Physics, University of Warwick, UK
2021	Assistant Professor, Department of Physics, University of Warwick, UK
2019	Ernest Rutherford Fellow, Department of Physics, University of Oxford, UK
2016	Stipendiary Lecturer in Physics, Pembroke College Oxford, UK (part-time)
2014	Research Associate, Department of Physics, University of Oxford, UK
2013	Research Associate, Physikalische Insitute, University of Heidelberg, Germany
2009	Research Assistant, Physikalische Insitute, University of Heidelberg, Germany
2007	Guest Scientist, DESY, Germany

Education

2013	Dr. rer. nat.	Physikalische Insitute, University of Heidelberg, Germany Supervisor: Prof. Johanna Stachel
2009	Diplom-Physiker	Department of Physics, University of Hamburg, Germany
	○ 2008	40. Herbstschule für Hochenergiephysik Maria Laach
2007	BSc	School of Physics, Peking University, China
	○ 2006	DESY Summer Student Programme

Fellowships and Awards

2023	Fellow of the Higher Education Academy (FHEA), UK
2021	Visiting Lecturer, Department of Physics, University of Oxford, UK
2019-2023	Senior Research Fellow, Pembroke College Oxford, UK
2018	Visiting researcher, Institute of Theoretical Physics, University of Wroclaw, Poland
2016	Visiting researcher, Department of Physics, Kyoto University, Japan
2014	Best technical thesis award for 2013, ALICE Collaboration
2007	Visitor, DESY, Germany

Major Collaborations and Roles

2023 GENIE, neutrino event generator

2021 Neutrinos from Stored Muons (nuSTORM)

2021 AIDAinnova, detector R&D
- ▪ Task Leader, WP7: Gaseous detectors, Task 7.4.2

2021 Jiangmen Underground Neutrino Observatory (JUNO)
- ▪ Convener, Neutrino Interaction (GANYMEDE) Working Group

2020 Deep Underground Neutrino Experiment (DUNE)

2016 MINERvA, neutrino interactions
- ○ Analysis Coordinator
- ○ Member, Executive Committee
- ○ Member, Speakers Committee
- ○ Convener, Exclusive Neutrino Interaction Working Group
- ○ Convener, Reconstruction and Algorithms Working Group

2014 T2K, neutrino oscillations and interactions
- ▪ Chair, Analysis Proposal Committee, Cross Section Group
- ○ Convener, Inclusive and Pion Production Cross Section Subgroup

2009-2014 ALICE, physics of strongly interacting matter at extreme energy densities

2006-2009 HERMES, spin structure of the nucleon

Supervised PhD Theses

2024 Komninos-John Plows, University of Oxford, *Search for Heavy Neutral Leptons in the MINERvA detector*

2023 Kang Yang, University of Oxford, *Measurement of the Pion Charge Exchange Differential Cross Section on Argon with the ProtoDUNE-SP Detector*

Organisation of Scientific Meetings

2023 Co-chair, Organising Committee, Joint Autumn Meeting of nuSTORM and UK Muon Beams Collaboration 2023, London, UK

2023 Convener, Neutrino Working Group, Muon Collider Synergies Workshop, Orsay, France

2023 Co-chair, Organising Committee, Workshop on Exploring the Physics Opportunities of nuSTORM, London, UK

2021 Chair, Organising Committee, Institute of Physics Workshop on Opportunities with Atmospheric Neutrinos (OWAN21), London, UK

2017 Session convener, 11th International Workshop on Neutrino-Nucleus Scattering in the Few-GeV Region, Toronto, Canada

2016 Session moderator, INT Workshop INT-16-63W: Theoretical Developments in Neutrino-Nucleus Scattering, Seattle, US

Major Invited Conference Talks

2022 *Neutrino Interactions and Future Oscillation Experiments*, NEUTRINO2022, Seoul, Korea (plenary talk, online).

2021 *Neutrino-Nucleus Interactions*, IOP Joint APP, HEPP and NP conference, UK (parallel plenary talk, online).

2019 *Neutrino Physics with Accelerators*, Research Area Workshop of the Max Planck Society on "Gravity, Information and Fundamental Symmetries", Garching, Germany.

Selected Publications

Neutrino Physics

1. Q. Yan, K. Niewczas, A. Nikolakopoulos, R. González-Jiménez, N. Jachowicz, X.-G. Lu, J. Sobczyk and Y. Zheng, The Ghent Hybrid Model in NuWro: a new neutrino single-pion production model in the GeV regime, arXiv:2405.05212 [hep-ph].
2. W. Li *et al.* [GENIE Collaboration], First combined tuning on transverse kinematic imbalance data with and without pion production constraints, arXiv:2404.08510 [hep-ex].
3. F. Battisti, M. Ivanov and X.-G. Lu, A Kalman Filter for track reconstruction in very large time projection chambers, arXiv:2404.08614 [physics.ins-det].
4. K.-J. Plows and X.-G. Lu, Modeling heavy neutral leptons in accelerator beamlines, Phys.Rev.D 107, 055003 (2023).
5. X.-G. Lu *et al*. [MINERvA Collaboration], Exploring Neutrino-Nucleus Interactions in the GeV Regime using MINERvA, Eur.Phys.J.ST 230, 4243 (2021). Invited contribution to EPJ special issue *Neutrino Interactions in the Intermediate and High Energy Region*.
6. A. Abed Abud *et al*. [DUNE Collaboration], Deep Underground Neutrino Experiment (DUNE) Near Detector Conceptual Design Report, Instruments 5, 31 (2021).
7. K. Abe *et al*. [T2K Collaboration], First T2K measurement of transverse kinematic imbalance in the muon-neutrino charged-current single-pi+ production channel containing at least one proton, Phys.Rev.D 103, 112009 (2021).
8. P. Hamacher-Baumann, X.-G. Lu, J. Martin-Albo, Neutrino-hydrogen interactions with a high-pressure TPC, Phys. Rev. D 102, 033005 (2020).
9. D. Coplowe *et al*. [MINERvA Collaboration], Probing Nuclear Effects with Neutrino-induced Charged-Current Neutral Pion Production, Phys. Rev. D 102, 072007 (2020). Corresponding author.
10. T. Cai, X.-G. Lu *et al*. [MINERvA Collaboration], Nuclear binding energy and transverse momentum imbalance in neutrino-nucleus reaction, Phys. Rev. D 101, 092001 (2020).
11. T. Cai, X.-G. Lu, D. Ruterbories, Pion-Proton Correlation in Neutrino Interactions on Nuclei, Phys. Rev. D 100, 073010 (2019).

12. X.-G. Lu, J. T. Sobczyk, Identification of nuclear effects in neutrino and antineutrino interactions on nuclei using generalized final-state correlations, Phys. Rev. C 99, 055504 (2019).
13. X.-G. Lu *et al*. [MINERvA Collaboration], Measurement of Final-State Correlations in Neutrino Muon-Proton Mesonless Production on Hydrocarbon at <E_nu>=3 GeV, Phys. Rev. Lett. 121, 022504 (2018).
14. K. Abe *et al*. [T2K Collaboration], Characterization of nuclear effects in muon-neutrino scattering on hydrocarbon with a measurement of final-state kinematics and correlations in charged-current pionless interactions at T2K, Phys. Rev. D 98, 032003 (2018).
15. X.-G. Lu, L. Pickering, S. Dolan, G. Barr, D. Coplowe, Y. Uchida, D. Wark, M.O. Wascko, A. Weber, T. Yuan, Measurement of nuclear effects in neutrino interactions with minimal dependence on neutrino energy, Phys. Rev. C 94, 015503 (2016).
16. X.-G. Lu, D. Coplowe, R. Shah, G. Barr, D. Wark, A. Weber, Reconstruction of energy spectra of neutrino beams independent of nuclear effects, Phys. Rev. D 92, 051302 (2015), Rapid Communication.

Heavy Ion Physics

17. S. Acharya *et al*. [ALICE Collaboration], The ALICE Transition Radiation Detector: construction, operation, and performance, Nucl. Instrum. Meth. A 881, 88 (2018).
18. X.-G. Lu [ALICE Collaboration], Measurement of hadron composition in charged jets from pp collisions with the ALICE experiment, Nucl. Phys. A 931, 428 (2014).
19. B. B. Abelev *et al*. [ALICE Collaboration], Performance of the ALICE Experiment at the CERN LHC, Int. J. Mod. Phys. A 29, 1430044 (2014).
20. B. B. Abelev *et al*. [ALICE Collaboration], Production of charged pions, kaons and protons at large transverse momenta in pp and Pb—Pb collisions at $\sqrt{s_{\rm NN}}$ =2.76 TeV, Phys. Lett. B 736, 196 (2014).

Hadron Physics

21. A. Airapetian *et al*. [HERMES Collaboration], Beam-helicity asymmetry in associated electroproduction of real photons $ep \to e\gamma\pi N$ in the Δ-resonance region, JHEP 01, 077 (2014).
22. A. Airapetian, *et al*. The HERMES Recoil Detector, JINST 8, P05012 (2013).
23. A. Airapetian *et al*. [HERMES Collaboration], Beam-helicity asymmetry arising from deeply virtual Compton scattering measured with kinematically complete event reconstruction, JHEP 10, 042 (2012).
24. A. Airapetian *et al*. [HERMES Collaboration], Measurement of double-spin asymmetries associated with deeply virtual Compton scattering on a transversely polarized hydrogen target, Phys. Lett. B 704, 15 (2011).
25. A. Airapetian *et al*. [HERMES Collaboration], Measurement of azimuthal asymmetries associated with deeply virtual Compton scattering on a longitudinally polarized deuterium target, Nucl. Phys. B 842, 265 (2011).
26. A. Airapetian *et al*. [HERMES Collaboration], Exclusive Leptoproduction of Real Photons on a Longitudinally Polarised Hydrogen Target, JHEP 06, 019 (2010).
27. A. Airapetian *et al*. [HERMES Collaboration], Nuclear-mass dependence of azimuthal beam-helicity and beam-charge asymmetries in deeply virtual Compton scattering, Phys. Rev. C 81, 035202 (2010).
28. A. Airapetian *et al*. [HERMES Collaboration], Measurement of azimuthal asymmetries associated with deeply virtual Compton scattering on an unpolarized deuterium target, Nucl. Phys. B 829, 1 (2010).
29. A. Airapetian *et al*. [HERMES Collaboration], Separation of contributions from deeply virtual Compton scattering and its interference with the Bethe-Heitler process in measurements on a hydrogen target, JHEP 11, 083 (2009).