Rapport d'activité LPNHE 2024–2025
Liste de publications du groupe Neutrinos

1. K. Aivazelis, D. Attié, P. Billoir et al. « Performance of the High-Angle Time Projection Chambers in the Upgraded T2K Off-Axis Near Detector ». *arXiv e-prints* (nov. 2025). arXiv : 2511.18650 [physics.ins-det]
2. NOvA, T2K Collaborations, K. Abe et al. « Joint neutrino oscillation analysis from the T2K and NOvA experiments ». *Nature* 646.8086 (2025), p. 818-824. DOI : 10.1038/s41586-025-09599-3. arXiv : 2510.19888 [hep-ex]
3. Botao Li, Daria Borodulina, Davide Sgalaberna et al. « A 3D segmented Water-based Liquid Scintillator for high-precision detection of neutrinos in water ». *arXiv e-prints* (août 2025). arXiv : 2508.11355 [physics.ins-det]
4. T2K Collaboration, K. Abe, S. Abe et al. « Measurement of muon neutrino induced charged current interactions without charged pions in the final state using a new T2K off-axis near detector WAGASCI-BabyMIND ». *arXiv e-prints* (sept. 2025). arXiv : 2509.07814 [hep-ex]
5. Lavinia Russo, Marco Martini, Stephen Dolan et al. « Implementation of the Martini-Ericson-Chanfray-Marteau RPA-based neutrino and antineutrino cross-section model in the GENIE neutrino event generator ». *Phys. Rev. D* 113.1 (2026), p. 012006. DOI : 10.1103/v8hq-kppp. arXiv : 2508.13939 [hep-ex]
6. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Proposal from the NA61/SHINE Collaboration for update of European Strategy for Particle Physics ». *arXiv e-prints* (juill. 2025). arXiv : 2507.08602 [nucl-ex]
7. T2K Collaboration, K. Abe, S. Abe et al. « Testing T2K's Bayesian constraints with priors in alternate parameterisations ». *arXiv e-prints* (juill. 2025). arXiv : 2507.02101 [hep-ex]
8. Hyper-Kamiokande Collaboration, K. Abe et et al. « The Hyper-Kamiokande experiment : input to the update of the European Strategy for Particle Physics ». *arXiv e-prints* (juin 2025). arXiv : 2506.16641 [hep-ex]
9. T2K Collaboration, K. Abe, S. Abe et al. « Results from the T2K experiment on neutrino mixing including a new far detector μ-like sample ». *arXiv e-prints* (juin 2025). arXiv : 2506.05889 [hep-ex]
10. T2K Collaboration, K. Abe, S. Abe et al. « First measurement of neutron capture multiplicity in neutrino-oxygen neutral-current quasielasticlike interactions using an accelerator neutrino beam ». Phys. Rev. D 112.3, 032003 (août 2025), p. 032003. DOI : 10.1103/qh28-4znk. arXiv : 2505.22547 [hep-ex]

11. Hyper-Kamiokande Collaboration, K. Abe et et al. « Sensitivity of the Hyper-Kamiokande experiment to neutrino oscillation parameters using accelerator neutrinos ». *arXiv e-prints* (mai 2025). arXiv : 2505.15019 [hep-ex]

12. T2K Collaboration, K. Abe, S. Abe et al. « First Measurement of the Electron-Neutrino Charged-Current Pion Production Cross Section on Carbon with the T2K Near Detector ». Phys. Rev. Lett. 135.15, 151802 (oct. 2025), p. 151802. DOI : 10.1103/klhv-7t6h. arXiv : 2505.00516 [hep-ex]

13. D. Attié, P. Billoir, G. Bortolato et al. « Characterization of the electronic noise in the readout of resistive Micromegas in the high-angle Time Projection Chambers of the T2K experiment ». *Nuclear Instruments and Methods in Physics Research A* 1081, 170803 (jan. 2026), p. 170803. DOI : 10.1016/j.nima.2025.170803. arXiv : 2504.07759 [physics.ins-det]

14. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Multiplicity and net-electric charge fluctuations in central Ar+Sc interactions at 13A, 19A, 30A, 40A, 75A, and 150AGeV/c beam momenta measured by NA61/SHINE at the CERN SPS ». *European Physical Journal C* 85.8, 918 (août 2025), p. 918. DOI : 10.1140/epjc/s10052-025-14621-z

15. T2K Collaboration, K. Abe, S. Abe et al. « First differential measurement of the single π^+ production cross section in neutrino neutral-current scattering ». *arXiv e-prints* (mars 2025). arXiv : 2503.06849 [hep-ex]

16. T2K Collaboration, K. Abe, S. Abe et al. « Signal selection and model-independent extraction of the neutrino neutral-current single $\pi+$ cross section with the T2K experiment ». Phys. Rev. D 112.7, 072008 (oct. 2025), p. 072008. DOI : 10.1103/wcn1-4tyl. arXiv : 2503.06843 [hep-ex]

17. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Measurements of hadron production in 90 GeV/c proton-carbon interactions ». Phys. Rev. D 112.1, 012011 (juill. 2025), p. 012011. DOI : 10.1103/42nk-jbvm. arXiv : 2410.23098 [hep-ex]

18. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Measurement of the mass-changing, charge-changing, and production cross sections of C11, B11, and B10 nuclei in C12+p interactions at 13.5GeV/c per nucleon ». Phys. Rev. C 111.5, 054606 (mai 2025), p. 054606. DOI : 10.1103/PhysRevC.111.054606

19. Claire Dalmazzone, Mathieu Guigue, Lucile Mellet et al. « Precise synchronization of a free-running Rubidium atomic clock with GPS Time for applications in experimental particle physics ». *Nuclear Instruments and Methods in Physics Research A* 1075, 170358 (juin 2025), p. 170358. DOI : 10.1016/j.nima.2025.170358. arXiv : 2407.20825 [physics.ins-det]

20. T2K Collaboration, K. Abe, S. Abe et al. « First Joint Oscillation Analysis of Super-Kamiokande Atmospheric and T2K Accelerator Neutrino Data ». Phys. Rev. Lett. 134.1, 011801 (jan. 2025), p. 011801. DOI : 10.1103/PhysRevLett.134.011801. arXiv : 2405.12488 [hep-ex]

21. NA61/SHINE Collaboration, N. Abgrall, H. Adhikary et al. « KS0 meson production in inelastic p+p interactions at 31, 40 and 80 GeV/c beam momentum measured by NA61/SHINE at the CERN SPS ». *European Physical Journal C* 84.8, 820 (août 2024), p. 820. DOI : 10.1140/epjc/s10052-024-13056-2. arXiv : 2402.17025 [hep-ex]

22. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Search for a critical point of strongly-interacting matter in central 40Ar + 45Sc collisions at 13 A-75 A GeV/c beam momentum ». *European Physical Journal C* 84.7, 741 (juill. 2024), p. 741. DOI : 10.1140/epjc/s10052-024-13012-0. arXiv : 2401.03445 [nucl-ex]

23. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Measurements of higher-order cumulants of multiplicity and net-electric charge distributions in inelastic proton-proton interactions by NA61/SHINE ». *European Physical Journal C* 84.9, 921 (sept. 2024), p. 921. DOI : 10.1140/epjc/s10052-024-13076-y. arXiv : 2312.13706 [hep-ex]

24. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Evidence of isospin-symmetry violation in high-energy collisions of atomic nuclei ». *Nature Communications* 16.1, 2849 (mars 2025), p. 2849. DOI : 10.1038/s41467-025-57234-6. arXiv : 2312.06572 [nucl-ex]

25. NA61/SHINE Collaboration, H. Adhikary, P. Adrich et al. « Measurements of $\pi\pm$, K±, p and $\bar{p}$ spectra in 40Ar+45Sc collisions at 13A to 150A GeV/c ». *European Physical Journal C* 84.4, 416 (avr. 2024), p. 416. DOI : 10.1140/epjc/s10052-024-12602-2. arXiv : 2308.16683 [nucl-ex]

26. A. Ashtari Esfahani, S. Böser, N. Buzinsky et al. « Cyclotron radiation emission spectroscopy of electrons from tritium β decay and Kr83m internal conversion ». Phys. Rev. C 109.3, 035503 (mars 2024), p. 035503. DOI : 10.1103/PhysRevC.109.035503. arXiv : 2303.12055 [nucl-ex]

27. L. Alvarez-Ruso, A. M. Ankowski, S. Bacca et al. « Theoretical tools for neutrino scattering : interplay between lattice QCD, EFTs, nuclear physics, phenomenology, and neutrino event generators ». *Journal of Physics G Nuclear Physics* 52.4, 043001 (avr. 2025), p. 043001. DOI : 10.1088/1361-6471/adae26. arXiv : 2203.09030 [hep-ph]

28. A. Ashtari Esfahani, A. Banducci, S. Böser et al. « The real-time data processing and acquisition system for Project 8 Phase II ». *Nuclear Instruments and Methods in Physics Research A* 1081, 170843 (jan. 2026), p. 170843. DOI : 10.1016/j.nima.2025.170843. arXiv : 2506.22392 [physics.ins-det]

29. M. B. Barbaro, V. Belocchi, A. De Pace et al. « MEC-induced two-nucleon emission in neutrino-nucleus scattering ». *arXiv e-prints* (sept. 2025). arXiv : 2509.13915 [nucl-th]

30. V. Belocchi, M. B. Barbaro, A. De Pace et al. « Two-particle two-hole excitations in semi-inclusive neutrino-nucleus scattering ». Phys. Rev. D 112.9, 093002 (nov. 2025), p. 093002. DOI : 10.1103/krrh-1pkh. arXiv : 2509.08786 [nucl-th]

31. David Durel, Sophie Péru et Marco Martini. « Fragmentation of the IAR along the chains $\mathbf{N = 50}$ and $\mathbf{Z = 50}$ ». *arXiv e-prints* (août 2025). arXiv : 2508.14643 [nucl-th]

32. P. R. Casale, J. E. Amaro, V. Belocchi et al. « Meson-Exchange Currents in Quasielastic Charged-Current Neutrino Reactions with Single-Nucleon Knockout ». *arXiv e-prints* (juill. 2025). arXiv : 2507.20246 [hep-ph]

33. P. R. Casale, J. E. Amaro, V. Belocchi et al. « Interference between meson exchange and one-body currents in quasielastic electron scattering ». Phys. Rev. C 112.2, 024603 (août 2025), p. 024603. DOI : 10.1103/q1nk-7ncq. arXiv : 2503.08391 [nucl-th]

34. Guy Chanfray, Magda Ericson, Hubert Hansen et al. « From QCD Phenomenology to Nuclear Physics Phenomenology : The Chiral Confining Model ». *Symmetry* 17.2, 313 (fév. 2025), p. 313. DOI : 10.3390/sym17020313. arXiv : 2501.10177 [nucl-th]

35. Marco Martini, Magda Ericson et Guy Chanfray. « Neutral-Current Single π^0 Production on Argon ». *Universe* 10.10, 399 (oct. 2024), p. 399. DOI : 10.3390/universe10100399

36. V. Belocchi, M. B. Barbaro, A. De Pace et al. « Relativistic meson-exchange currents in semi-inclusive lepton scattering ». Phys. Rev. C 109.6, 065502 (juin 2024), p. 065502. DOI : 10.1103/PhysRevC.109.065502. arXiv : 2401.13640 [nucl-th]

37. M. Martini, M. Ericson et G. Chanfray. « Phase space of electron- and muon-neutrino and antineutrino scattering off nuclei ». Phys. Rev. C 110.2, 025502 (août 2024), p. 025502. DOI : 10.1103/PhysRevC.110.025502. arXiv : 2310.06388 [hep-ph]

38. Lavinia Russo. *Implementing the Martini et al model into the GENIE MC event generator*. Juin 2024. DOI : 10.5281/zenodo.13846941. URL : https://doi.org/10.5281/zenodo.13846941