

# Publication List from all Collaborations and Experiments

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April 3, 2025

- A. Hayrapetyan et al., **Search for  $t$ -channel scalar and vector leptoquark exchange in the high-mass dimuon and dielectron spectra in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2503.20023>, arXiv:2503.20023 [hep-ex]
- V. Chekhovsky et al., **Search for dark matter production in association with a single top quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2503.20033>, arXiv:2503.20033 [hep-ex]
- A. Hayrapetyan et al., **Observation of a pseudoscalar excess at the top quark pair production threshold**, (2025). <http://arxiv.org/abs/2503.22382>, arXiv:2503.22382 [hep-ex]
- V. Chekhovsky et al., **Observation of WZ  $\gamma$  production and constraints on new physics scenarios in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2503.21977>, arXiv:2503.21977 [hep-ex]
- V. Chekhovsky et al., **Observation of the charged-particle multiplicity dependence of  $\sigma_{\psi(2S)}/\sigma_{J/\psi}$  in pPb collisions at 8.16 TeV**, (2025). <http://arxiv.org/abs/2503.02139>, arXiv:2503.02139 [nucl-ex]
- V. Chekhovsky et al., **Small- $x$  evolution of gluon fields from incoherent J/ $\psi$  photoproduction in ultraperipheral PbPb collisions**, (2025). <http://arxiv.org/abs/2503.08903>, arXiv:2503.08903 [nucl-ex]
- V. Chekhovsky et al., **Search for the associated production of a Higgs boson with a charm quark in the diphoton decay channel in pp collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2503.08797>, arXiv:2503.08797 [hep-ex]
- V. Chekhovsky et al., **Luminosity measurement for lead-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV in 2015 and 2018 at CMS**, (2025). <http://arxiv.org/abs/2503.03946>, arXiv:2503.03946 [hep-ex]
- V. Chekhovsky et al., **Measurements of the inclusive W and Z boson production cross sections and their ratios in proton-proton collisions at  $\sqrt{s} = 13.6$  TeV**, (2025). <http://arxiv.org/abs/2503.09742>, arXiv:2503.09742 [hep-ex]
- V. Chekhovsky et al., **Search for vector-like leptons with long-lived particle decays in the CMS muon system in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2503.16699>, arXiv:2503.16699 [hep-ex]
- A. Hayrapetyan et al., **Search for new physics in jet scaling patterns of multilepton events at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2503.06726>, arXiv:2503.06726 [hep-ex]
- V. Chekhovsky et al., **Observation of nuclear modification of energy-energy correlators inside jets in heavy ion collisions**, (2025). <http://arxiv.org/abs/2503.19993>, arXiv:2503.19993 [nucl-ex]
- V. Chekhovsky et al., **Development of systematic uncertainty-aware neural network trainings for binned-likelihood analyses at the LHC**, (2025). <http://arxiv.org/abs/2502.13047>, arXiv:2502.13047 [hep-ex]
- V. Chekhovsky et al., **Search for medium effects using jet axis decorrelation in inclusive jets from PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV**, (2025). <http://arxiv.org/abs/2502.13020>, arXiv:2502.13020 [nucl-ex]
- V. Chekhovsky et al., **Search for bosons of an extended Higgs sector in b quark final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2502.06568>, arXiv:2502.06568 [hep-ex]
- V. Chekhovsky et al., **Evidence for similar collectivity of high transverse momentum particles in pPb and PbPb collisions**, (2025). <http://arxiv.org/abs/2502.07525>, arXiv:2502.07525 [nucl-ex]
- A. Hayrapetyan et al., **Observation of  $\Lambda$  hyperon local polarization in pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV**, (2025). <http://arxiv.org/abs/2502.07898>, arXiv:2502.07898 [nucl-ex]
- V. Chekhovsky et al., **Search for  $\gamma$ H production and constraints on the Yukawa couplings of light quarks to the Higgs boson**, (2025). <http://arxiv.org/abs/2502.05665>, arXiv:2502.05665 [hep-ex]

- V. Chekhovsky et al., **Search for a heavy pseudoscalar Higgs boson decaying to a 125 GeV Higgs boson and a Z boson in final states with two tau and two light leptons in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2025). <http://arxiv.org/abs/2501.14825>, arXiv:2501.14825 [hep-ex]
- V. Chekhovsky et al., **Measurements of Higgs boson production cross section in the four-lepton final state in proton-proton collisions at  $\sqrt{s} = 13.6$  TeV**, (2025). <http://arxiv.org/abs/2501.14849>, arXiv:2501.14849 [hep-ex]
- A. Hayrapetyan et al., **Measurement of light-by-light scattering and the Breit-Wheeler process, and search for axion-like particles in ultraperipheral PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV**, (2024). <http://arxiv.org/abs/2412.15413>, arXiv:2412.15413 [nucl-ex]
- A. Hayrapetyan et al., **Measurement of the inclusive WZ production cross section in pp collisions at  $\sqrt{s} = 13.6$  TeV**, (2024). <http://arxiv.org/abs/2412.02477>, arXiv:2412.02477 [hep-ex]
- V. Chekhovsky et al., **High-precision measurement of the W boson mass with the CMS experiment at the LHC**, (2024). <http://arxiv.org/abs/2412.13872>, arXiv:2412.13872 [hep-ex]
- A. Hayrapetyan et al., **Search for heavy neutral resonances decaying to tau lepton pairs in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2412.04357>, arXiv:2412.04357 [hep-ex]
- V. Chekhovsky et al., **Model-agnostic search for dijet resonances with anomalous jet substructure in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2412.03747>, arXiv:2412.03747 [hep-ex]
- V. Chekhovsky et al., **Identification of low-momentum muons in the CMS detector using multivariate techniques in proton-proton collisions at  $\sqrt{s} = 13.6$  TeV**, (2024). <http://arxiv.org/abs/2412.17590>, arXiv:2412.17590 [hep-ex]
- V. Chekhovsky et al., **Determination of the strong coupling and its running from measurements of inclusive jet production**, (2024). <http://arxiv.org/abs/2412.16665>, arXiv:2412.16665 [hep-ex]
- A. Hayrapetyan et al., **Measurement of the W boson decay branching fraction ratio  $\mathcal{B}(W \rightarrow cq)/\mathcal{B}(W \rightarrow q\bar{q}')$  in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2412.16296>, arXiv:2412.16296 [hep-ex]
- A. Hayrapetyan et al., **Search for a neutral gauge boson with nonuniversal fermion couplings in vector boson fusion processes in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2412.19261>, arXiv:2412.19261 [hep-ex]
- A. Hayrapetyan et al., **Evidence for CP violation and measurement of CP-violating parameters in  $B_s^0 \rightarrow J/\psi \phi(1020)$  decays in pp collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2412.19952>, arXiv:2412.19952 [hep-ex]
- A. Hayrapetyan et al., **Search for rare decays of the Z and Higgs bosons to a  $J/\psi$  or  $\psi(2S)$  meson and a photon in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2411.15000>, arXiv:2411.15000 [hep-ex]
- A. Hayrapetyan et al., **Reweighting simulated events using machine-learning techniques in the CMS experiment**, (2024). <http://arxiv.org/abs/2411.03023>, arXiv:2411.03023 [hep-ex]
- A. Hayrapetyan et al., **Proton reconstruction with the TOTEM Roman pot detectors for high- $\beta^*$  LHC data**, (2024). <http://arxiv.org/abs/2411.19749>, arXiv:2411.19749 [hep-ex]
- A. Hayrapetyan et al., **Search for heavy neutral Higgs bosons A and H in the  $t\bar{t}Z$  channel in proton-proton collisions at 13 TeV**, (2024). <http://arxiv.org/abs/2412.00570>, arXiv:2412.00570 [hep-ex]
- A. Hayrapetyan et al., **Search for high-mass resonances in a final state comprising a gluon and two hadronically decaying W bosons in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2410.17303>, arXiv:2410.17303 [hep-ex]
- A. Hayrapetyan et al., **Study of same-sign W boson scattering and anomalous couplings in events with one tau lepton from pp collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2410.04210>, arXiv:2410.04210 [hep-ex]
- A. Hayrapetyan et al., **Search for heavy long-lived charged particles with large ionization energy loss in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2410.09164>, arXiv:2410.09164 [hep-ex]
- A. Tumasyan et al., **Correlations between azimuthal anisotropy and mean transverse momentum in pp, pPb, and peripheral PbPb collisions**, (2024). <http://arxiv.org/abs/2410.04578>, arXiv:2410.04578 [nucl-ex]
- A. Hayrapetyan et al., **Search for excited tau leptons in the  $\tau\tau\gamma$  final state in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2410.21137>, arXiv:2410.21137 [hep-ex]
- A. Hayrapetyan et al., **Measurement of the Higgs boson mass and width using the four-lepton final state in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, (2024). <http://arxiv.org/abs/2409.13663>, arXiv:2409.13663 [hep-ex]

- A. Hayrapetyan et al., **Energy-scaling behavior of intrinsic transverse momentum parameters in Drell-Yan simulation**, (2024). <http://arxiv.org/abs/2409.17770>, arXiv:2409.17770 [hep-ph]
- A. Hayrapetyan et al., **Bottom quark energy loss and hadronization with  $B^+$  and  $B_s^0$  nuclear modification factors using pp and \PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV**, (2024). <http://arxiv.org/abs/2409.07258>, arXiv:2409.07258 [nucl-ex]
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- A. Hayrapetyan et al., **Stairway to discovery: a report on the CMS programme of cross section measurements from millibarns to femtobarns**, (2024). <http://arxiv.org/abs/2405.18661>, arXiv:2405.18661 [hep-ex]
- A. Hayrapetyan et al., **Overview of high-density QCD studies with the CMS experiment at the LHC**, (2024). <http://arxiv.org/abs/2405.10785>, arXiv:2405.10785 [nucl-ex]
- A. Hayrapetyan et al., **Dark sector searches with the CMS experiment**, (2024). <http://arxiv.org/abs/2405.13778>, arXiv:2405.13778 [hep-ex]
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- A. Hayrapetyan et al., **Review of searches for vector-like quarks, vector-like leptons, and heavy neutral leptons in protonproton collisions at  $\sqrt{s} = 13\text{TeV}$  at the CMS experiment**, *Phys. Rept.* 1115 (2025) 570–677, doi:10.1016/j.physrep.2024.09.012, arXiv:2405.17605 [hep-ex]
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- A. Hayrapetyan et al., **Search for a heavy resonance decaying into a Z and a Higgs boson in events with an energetic jet and two electrons, two muons, or missing transverse momentum in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, *JHEP*. 02 (2025) 089, doi:[10.1007/JHEP02\(2025\)089](https://doi.org/10.1007/JHEP02(2025)089), arXiv:[2411.00202](https://arxiv.org/abs/2411.00202) [hep-ex]
- A. Hayrapetyan et al., **Measurement of inclusive and differential cross sections for  $W^+W^-$  production in proton-proton collisions at  $\sqrt{s} = 13.6$  TeV**, *Phys. Lett. B*. 861 (2025) 139231, doi:[10.1016/j.physletb.2024.139231](https://doi.org/10.1016/j.physletb.2024.139231), arXiv:[2406.05101](https://arxiv.org/abs/2406.05101) [hep-ex]
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- A. Tumasyan et al., **Search for resonant pair production of Higgs bosons in the  $b\bar{b}b\bar{b}$  final state using large-area jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV**, *JHEP*. 02 (2025) 040, doi:[10.1007/JHEP02\(2025\)040](https://doi.org/10.1007/JHEP02(2025)040), arXiv:[2407.13872](https://arxiv.org/abs/2407.13872) [hep-ex]
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