

# Papers by AUTHOR Alexi Mestvirishvili

1. **“Search for long-lived particles using nonprompt jets and missing transverse momentum with proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1906.06441 [hep-ex]  
CMS-EXO-19-001, CERN-EP-2019-113
2. **“A multi-dimensional search for new heavy resonances decaying to boosted WW, WZ, or ZZ boson pairs in the dijet final state at 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1906.05977 [hep-ex]  
CMS-B2G-18-002, CERN-EP-2019-107
3. **“Production of  $\Lambda_c^+$  baryons in proton-proton and lead-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1906.03322 [hep-ex]  
CMS-HIN-18-009, CERN-EP-2019-102
4. **“Search for the production of four top quarks in the single-lepton and opposite-sign dilepton final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1906.02805 [hep-ex]  
CERN-EP-2019-098
5. **“Combination of CMS searches for heavy resonances decaying to pairs of bosons or leptons”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1906.00057 [hep-ex]  
CMS-B2G-18-006, CERN-EP-2019-110
6. **“Search for supersymmetry with a compressed mass spectrum in the vector boson fusion topology with 1-lepton and 0-lepton final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.13059 [hep-ex]  
CMS-SUS-17-007, CERN-EP-2019-093
7. **“Search for vector-like leptons in multilepton final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.10853 [hep-ex]  
CMS-EXO-18-005, CERN-EP-2019-088
8. **“Search for Higgs and Z boson decays to  $J/\psi$  or  $\Upsilon$  pairs in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.10408 [hep-ex]  
CMS-HIG-18-025, CERN-EP-2019-082
9. **“Search for low-mass quark-antiquark resonances produced in association with a photon at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].

10. **“Correlations of azimuthal anisotropy Fourier harmonics in pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.09935 [hep-ex]  
CMS-HIN-18-015, CERN-EP-2019-031
11. **“Search for anomalous electroweak production of vector boson pairs in association with two jets in proton-proton collisions at 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.07445 [hep-ex]  
CMS-SMP-18-006, CERN-EP-2019-089
12. **“Search for a light charged Higgs boson decaying to a W boson and a CP-odd Higgs boson in final states with  $e\mu\mu$  or  $\mu\mu\mu$  in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.07453 [hep-ex]  
CMS-HIG-18-020, CERN-EP-2019-083
13. **“Search for the production of  $W^\pm W^\pm W^\mp$  events at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-SMP-17-013, CERN-EP-2019-074
14. **“Observation of nuclear modifications in  $W^\pm$  boson production in pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1905.01486 [hep-ex]  
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15. **“Multiparticle correlation studies in pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1904.11519 [hep-ex]  
CMS-HIN-17-004, CERN-EP-2019-075
16. **“Measurement of  $t\bar{t}$  normalised multi-differential cross sections in pp collisions at  $\sqrt{s} = 13$  TeV, and simultaneous determination of the strong coupling strength, top quark pole mass, and parton distribution functions”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-TOP-18-004, CERN-EP-2019-028
17. **“Search for resonances decaying to a pair of Higgs bosons in the  $b\bar{b}q\bar{q}'\ell\nu$  final state in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-B2G-18-008, CERN-EP-2019-056
18. **“Extraction and validation of a new set of CMS PYTHIA8 tunes from underlying-event measurements”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1903.12179 [hep-ex]  
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19. **“Search for new physics in top quark production in dilepton final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].

20. **“Search for a low-mass  $\tau^+\tau^-$  resonance in association with a bottom quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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21. **“Search for supersymmetry in final states with photons and missing transverse momentum in proton-proton collisions at 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1903.07070 [hep-ex]  
  
CMS-SUS-17-011, CERN-EP-2019-040
  
22. **“Constraints on anomalous HVV couplings from the production of Higgs bosons decaying to  $\tau$  lepton pairs”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1903.06973 [hep-ex]  
  
CMS-HIG-17-034, CERN-EP-2019-029
  
23. **“Performance of missing transverse momentum reconstruction in proton-proton collisions at  $\sqrt{s} = 13$  TeV using the CMS detector”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1903.06078 [hep-ex]  
  
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24. **“Search for charged Higgs bosons in the  $H^\pm \rightarrow \tau^\pm\nu_\tau$  decay channel in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-HIG-18-014, CERN-EP-2019-025
  
25. **“Measurement of electroweak production of a W boson in association with two jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1903.04040 [hep-ex]  
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26. **“An embedding technique to determine  $\tau\tau$  backgrounds in proton-proton collision data”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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27. **“Search for a heavy pseudoscalar boson decaying to a Z and a Higgs boson at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1903.00941 [hep-ex]  
CMS-HIG-18-005, CERN-EP-2018-343
  
28. **“Combinations of single-top-quark production cross-section measurements and  $|f_{LV}V_{tb}|$  determinations at  $\sqrt{s} = 7$  and 8 TeV with the ATLAS and CMS experiments Combinations of single-top-quark production cross-section measurements and  $|f_{LV}V_{tb}|$  determinations**

- at  $\sqrt{s} = 7$  and  $8$  TeV with the ATLAS and CMS experiments”  
M. Aaboud *et al.* [ATLAS and CMS Collaborations].  
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29. “Azimuthal separation in nearly back-to-back jet topologies in inclusive 2- and 3-jet events in pp collisions at  $\sqrt{s} = 13$  TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-SMP-17-009, CERN-EP-2018-344
30. “Pseudorapidity distributions of charged hadrons in xenon-xenon collisions at  $\sqrt{s_{\text{NN}}} = 5.44$  TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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31. “Measurement of exclusive  $\rho(770)^0$  photoproduction in ultraperipheral pPb collisions at  $\sqrt{s_{\text{NN}}} = 5.02$  TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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32. “Observation of Two Excited  $B_c^+$  States and Measurement of the  $B_c^+(2S)$  Mass in pp Collisions at  $\sqrt{s} = 13$  TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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33. “Search for  $W$  boson decays to three charged pions”  
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34. “Charged-particle angular correlations in XeXe collisions at  $\sqrt{s_{\text{NN}}} = 5.44$  TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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35. “Search for supersymmetry in events with a photon, jets, b -jets, and missing transverse momentum in protonproton collisions at 13 TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-SUS-18-002, CERN-EP-2018-353
36. “Measurement of electroweak WZ boson production and search for new physics in WZ + two jets events in pp collisions at  $\sqrt{s} = 13$  TeV”  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1901.04060 [hep-ex]  
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37. **“Measurements of the  $pp \rightarrow WZ$  inclusive and differential production cross section and constraints on charged anomalous triple gauge couplings at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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38. **“Search for dark matter produced in association with a single top quark or a top quark pair in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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39. **“Search for the pair production of light top squarks in the  $e^{\pm}\mu^{\mp}$  final state in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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40. **“Measurements of the Higgs boson width and anomalous  $HVV$  couplings from on-shell and off-shell production in the four-lepton final state”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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41. **“Measurement of the single top quark and antiquark production cross sections in the  $t$  channel and their ratio in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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42. **“Measurement of the top quark mass in the all-jets final state at  $\sqrt{s} = 13$  TeV and combination with the lepton+jets channel”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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43. **“Measurement of the  $t\bar{t}$  production cross section, the top quark mass, and the strong coupling constant using dilepton events in pp collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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44. **“Measurement of the differential Drell-Yan cross section in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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45. **“Search for contact interactions and large extra dimensions in the dilepton mass spectra from proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
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46. **“Search for vector-like quarks in events with two oppositely charged leptons and jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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47. **“Search for a heavy resonance decaying to a top quark and a vector-like top quark in the lepton+jets final state in pp collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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48. **“Measurement and interpretation of differential cross sections for Higgs boson production at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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49. **“Inclusive search for supersymmetry in pp collisions at  $\sqrt{s} = 13$  TeV using razor variables and boosted object identification in zero and one lepton final states”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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50. **“Search for an exotic decay of the Higgs boson to a pair of light pseudoscalars in the final state with two muons and two b quarks in pp collisions at 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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51. **“Observation of Single Top Quark Production in Association with a Z Boson in Proton-Proton Collisions at  $\sqrt{s} = 13$  TeV”**  
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52. **“Measurement of the energy density as a function of pseudorapidity in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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53. **“Search for supersymmetry in events with a photon, a lepton, and missing transverse momentum in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
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54. **“Measurement of inclusive very forward jet cross sections in proton-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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55. **“A search for pair production of new light bosons decaying into muons in proton-proton collisions at 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1812.00380 [hep-ex]  
  
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56. **“Measurement of associated production of a W boson and a charm quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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57. **“Search for dark matter in events with a leptoquark and missing transverse momentum in proton-proton collisions at 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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58. **“Search for resonant production of second-generation sleptons with same-sign dimuon events in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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59. **“Search for associated production of a Higgs boson and a single top quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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60. **“Combination of searches for Higgs boson pair production in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**

- A. M. Sirunyan *et al.* [CMS Collaboration].  
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61. **“Search for a standard model-like Higgs boson in the mass range between 70 and 110 GeV in the diphoton final state in proton-proton collisions at  $\sqrt{s} = 8$  and 13 TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-HIG-17-013, CERN-EP-2018-207
62. **“Search for long-lived particles decaying into displaced jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-EXO-18-007, CERN-EP-2018-289
63. **“Search for a W boson decaying to a vector-like quark and a top or bottom quark in the all-jets final state”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-B2G-18-001, CERN-EP-2018-279
64. **“Measurements of  $t\bar{t}$  differential cross sections in proton-proton collisions at  $\sqrt{s} = 13$  TeV using events containing two leptons”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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65. **“Search for dark matter produced in association with a Higgs boson decaying to a pair of bottom quarks in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-EXO-16-050, CERN-EP-2018-287
66. **“Search for excited leptons in  $\ell\ell\gamma$  final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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67. **“Search for pair production of first-generation scalar leptoquarks at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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68. **“Search for heavy neutrinos and third-generation leptoquarks in hadronic states of two  $\tau$  leptons and two jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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69. **“Event shape variables measured using multijet final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
arXiv:1811.00588 [hep-ex]  
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70. **“Search for nonresonant Higgs boson pair production in the  $b\bar{b}b\bar{b}$  final state at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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CMS-HIG-17-017, CERN-EP-2018-269
71. **“Search for low-mass resonances decaying into bottom quark-antiquark pairs in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
A. M. Sirunyan *et al.* [CMS Collaboration].  
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98. **“Search for an  $L_\mu - L_\tau$  gauge boson using  $Z \rightarrow 4\mu$  events in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
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136. **“Measurement of nuclear modification factors of  $\Upsilon(1S)$ ,  $\Upsilon(2S)$ , and  $\Upsilon(3S)$  mesons in PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV”**  
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150. **“Search for  $t\bar{t}H$  production in the  $H \rightarrow b\bar{b}$  decay channel with leptonic  $t\bar{t}$  decays in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
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178. **“Observation of Medium-Induced Modifications of Jet Fragmentation in Pb-Pb Collisions at  $\sqrt{s_{NN}} = 5.02$  TeV Using Isolated Photon-Tagged Jets”**  
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323. **“Search for heavy neutrinos or third-generation leptoquarks in final states with two hadronically decaying  $\tau$  leptons and two jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV”**  
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