

# **Veröffentlichungen am DESY 2019**



# 1 | POF3-610 - Materie und Universum

## ISI oder SCOPUS

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M. G. Aartsen et al.

**Constraints on minute-scale transient astrophysical neutrino sources.**

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**Cosmic ray spectrum and composition from PeV to EeV using 3 years of data from IceTop and IceCube.**

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**Detection of the temporal variation of the Sun's cosmic ray shadow with the IceCube detector.**

*The astrophysical journal / 1*, 872(2):133, and PUBDB-2020-00120, arXiv:1811.02015.

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**Efficient propagation of systematic uncertainties from calibration to analysis with the SnowStorm method in IceCube.**

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**The 2014 TeV  $\gamma$ -Ray Flare of Mrk 501 Seen with H.E.S.S.: Temporal and Spectral Constraints on Lorentz Invariance Violation.**

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**Effects of localized  $\mu$ -terms at the fixed points in magnetized orbifold models.**

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*Physical review letters*, 122(8):089901, and PUBDB-2020-00495, arXiv:1808.00336. CERN-EP-2018-164.

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*Physics letters / B*, 798:134913, and PUBDB-2019-04956, arXiv:1903.10415. CERN-EP-2019-041.  
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*Journal of high energy physics*, 2019(8):33, and PUBDB-2019-04764, arXiv:1903.02942. CERN-EP-2019-011.  
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*Physics letters / B*, 789:167, and PUBDB-2019-03124, arXiv:1809.07280. CERN-EP-2018-196.  
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*Physics letters / B*, 790:108, and PUBDB-2019-03052, arXiv:1805.05635. CERN-EP-2018-105.  
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*Physics letters / B*, 798:134949, and PUBDB-2019-04954, arXiv:1903.10052. CERN-EP-2019-038.  
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*Journal of high energy physics*, 2019(4):93, and PUBDB-2019-03204, arXiv:1901.10075. CERN-EP-2018-340.  
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*The European physical journal / C*, 79(4):290, and PUBDB-2019-03126, arXiv:1810.01772. CERN-EP-2018-238.  
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*Journal of high energy physics*, 2019(11):150, and PUBDB-2019-04963, arXiv:1905.02302. CERN-EP-2019-059.  
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*Physical review / D*, 99(7):072009, and PUBDB-2019-03203, arXiv:1901.03584. CERN-EP-2018-331.  
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*Journal of high energy physics*, 2019(5):141, and PUBDB-2020-00462, arXiv:1903.04618. CERN-EP-2019-019.  
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*The European physical journal / C*, 79(11):901, and PUBDB-2019-05049, arXiv:1907.03567. CERN-EP-2019-095.  
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*The European physical journal / C*, 79(11):935, and PUBDB-2019-05071, arXiv:1907.10414. CERN-EP-2019-123.  
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*The European physical journal / C*, 79(6):535, and PUBDB-

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*Journal of high energy physics*, 2019(10):127, and PUBDB-2019-04969, arXiv:1905.07163. CERN-EP-2019-066.  
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*Physics letters / B*, B789:508, and PUBDB-2020-00478, arXiv:1808.09054. CERN-EP-2018-212.  
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*Zeitschrift für Physik / C*, 79(5):382, and PUBDB-2019-03191, arXiv:1812.01697. CERN-EP-2018-302.  
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*Journal of high energy physics*, 2019(4):46, and PUBDB-2019-03187, arXiv:1811.12113. CERN-EP-2018-276.  
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*The European physical journal / C*, 79(12):1028, and PUBDB-2020-00205, arXiv:1908.07305. CERN-EP-2019-149.  
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*Zeitschrift für Physik / C*, 79(2):128, and PUBDB-2019-03127, arXiv:1810.08424. CERN-EP-2018-259.  
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*Journal of Instrumentation*, 14(06):P06012, and PUBDB-2019-04965, arXiv:1905.03739. CERN-EP-2019-061.  
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*Physical review letters*, 123(16):161801, and PUBDB-2019-04993, arXiv:1906.03203. CERN-EP-2019-008.  
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*Physics letters / B*, 793:469, and PUBDB-2019-03199, arXiv:1812.09740. CERN-EP-2018-286.  
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*Physical review letters*, 123(5):052001, and PUBDB-2019-04957, arXiv:1904.03536. CERN-EP-2019-051.  
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*The European physical journal / C*, 79(5):375, and PUBDB-2019-03110, arXiv:1808.07858. CERN-EP-2018-192.  
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*Physical review / D*, 99(5):052004, and PUBDB-2019-03197, arXiv:1812.09283. CERN-EP-2018-323.  
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*Physical review / D*, 100(5):052011, and PUBDB-2019-05000, arXiv:1906.09254. CERN-EP-2019-090.  
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*Journal of Instrumentation*, 14(09):P09011, and PUBDB-2019-05006, arXiv:1906.12226. CERN-EP-2019-091.  
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*Physical review / D*, 100(5):052013, and PUBDB-2019-04996, arXiv:1906.05609. CERN-EP-2019-100.  
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*Physics letters / B*, 798:134942, and PUBDB-2019-04962, arXiv:1904.12679. CERN-EP-2019-052.  
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*Physical review / D*, 100(1):012006, and PUBDB-2019-03198, arXiv:1812.09432. CERN-EP-2018-306.  
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*Physical review / D*, 99(5):052009, and PUBDB-2019-03128, arXiv:1811.02305. CERN-EP-2018-174.  
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*Physics letters / B*, 788:96, and PUBDB-2019-03108, arXiv:1808.04095. CERN-EP-2018-198.  
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*Physical review / D*, 99(9):092007, and PUBDB-2019-03208, arXiv:1902.01636. CERN-EP-2018-339.  
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*Physics letters / B*, 796:131, and PUBDB-2019-02789, arXiv:1812.00380. CMS-HIG-18-003. CERN-EP-2018-288.

doi: 10.1016/j.physletb.2019.07.013.

CMS Collaboration.

**An embedding technique to determine  $\tau\tau$  backgrounds in proton-proton collision data.**

*Journal of Instrumentation*, 14(06):P06032, and PUBDB-2019-02807, arXiv:1903.01216. CMS-TAU-18-001. CERN-EP-2019-012.

doi: 10.1088/1748-0221/14/06/P06032.

CMS Collaboration.

**Azimuthal separation in nearly back-to-back jet topologies in inclusive 2- and 3-jet events in pp collisions at  $\sqrt{s} = 13$  TeV.**

*The European physical journal / C*, 79(9):773, and PUBDB-2019-03877, arXiv:1902.04374. CMS-SMP-17-009. CERN-EP-2018-344.

doi: 10.1140/epjc/s10052-019-7276-4.

CMS Collaboration.

**Centrality and pseudorapidity dependence of the transverse energy density in pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physical review / C*, 100(2):024902, and PUBDB-2019-03405, arXiv:1810.05745. CMS-HIN-14-014. CERN-EP-2018-268.

doi: 10.1103/PhysRevC.100.024902.

CMS Collaboration.

**Charged-particle angular correlations in XeXe collisions at  $\sqrt{s_{NN}} = 5.44$  TeV.**

*Physical review / C*, 100(4):044902, and PUBDB-2019-03876, arXiv:1901.07997. CMS-HIN-18-001. CERN-EP-2018-345.

doi: 10.1103/PhysRevC.100.044902.

CMS Collaboration.

**Combination of CMS searches for heavy resonances decaying to pairs of bosons or leptons.**

*Physics letters / B*, 798:25, and PUBDB-2019-03937, arXiv:1906.00057. CMS-B2G-18-006. CERN-EP-2019-110.

doi: 10.1016/j.physletb.2019.134952.

CMS Collaboration.

**Combination of searches for Higgs boson pair production in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review letters*, 122(12):121803, and PUBDB-2019-02088, arXiv:1811.09689. CMS-HIG-17-030. CERN-EP-2018-292.

doi: 10.1103/PhysRevLett.122.121803.

CMS Collaboration.

**Erratum to: Search for a new scalar resonance decaying to a pair of Z bosons in proton-proton collisions at  $s = 13$   $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 2019(3):128, and PUBDB-2020-00455, CMS-HIG-17-012. CERN-EP-2018-009, arXiv:1804.01939.

doi: 10.1007/JHEP03(2019)128.

CMS Collaboration.

**Evidence for light-by-light scattering and searches for axion-like particles in ultraperipheral PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physics letters / B*, 797:134826, and PUBDB-2019-03406, arXiv:1810.04602. CMS-FSQ-16-012. CERN-EP-2018-271.

doi: 10.1016/j.physletb.2019.134826.

CMS Collaboration.

**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.**

*Journal of high energy physics*, 1903(03):031, and PUBDB-2019-02102, arXiv:1812.06302. CMS-SUS-16-017. CERN-EP-2018-307.

doi: 10.1007/JHEP03(2019)031.

CMS Collaboration.

**Jet shapes of isolated photon-tagged jets in PbPb and pp collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physical review letters*, 122(15):152001, and PUBDB-2019-02063, arXiv:1809.08602. CMS-HIN-18-006. CERN-EP-2018-249.

doi: 10.1103/PhysRevLett.122.152001.

CMS Collaboration.

**Measurement of associated production of a W boson and a charm quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*The European physical journal / C*, 79(3):269, and PUBDB-2019-02090, arXiv:1811.10021. CMS-SMP-17-014. CERN-EP-2018-282.

doi: 10.1140/epjc/s10052-019-6752-1.

CMS Collaboration.

**Measurement of  $B_s^0$  meson production in pp and PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physics letters / B*, 796:168, and PUBDB-2019-03407, arXiv:1810.03022. CMS-HIN-17-008. CERN-EP-2018-257.

doi: 10.1016/j.physletb.2019.07.014.

CMS Collaboration.

**Measurement of differential cross sections for inclusive isolated-photon and photon+jets production in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*The European physical journal / C*, 79(1):20, and PUBDB-2020-00501, arXiv:1807.00782. CMS-SMP-16-003. CERN-EP-2018-167.

doi: 10.1140/epjc/s10052-018-6482-9.

CMS Collaboration.

**Measurement of differential cross sections for Z boson pair production in association with jets at  $\sqrt{s} = 8$  and 13 TeV.**

*Physical review / B*, 789:19, and PUBDB-2019-00556, arXiv:1806.11073. CMS-SMP-17-005. CERN-EP-2018-161.

doi: 10.1016/j.physletb.2018.11.007.

CMS Collaboration.

**Measurement of electroweak WZ boson production and search for new physics in WZ + two jets events in pp collisions at  $\sqrt{s} = 13$  TeV.**

*Physics letters / B*, 795:281, and PUBDB-2019-02803, arXiv:1901.04060. CMS-SMP-18-001. CERN-EP-2018-333.

doi: 10.1016/j.physletb.2019.05.042.

CMS Collaboration.

**Measurement of exclusive  $\rho(770)^0$  photoproduction in ultraperipheral pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*The European physical journal / C*, 79(8):702, and PUBDB-2019-03408, arXiv:1902.01339. CMS-FSQ-16-007. CERN-EP-2018-285.

doi: 10.1140/epjc/s10052-019-7202-9.

CMS Collaboration.

**Measurement of exclusive  $\Upsilon$  photoproduction from protons in pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*The European physical journal / C*, 79(3):277, and PUBDB-2019-02065, arXiv:1809.11080. CMS-FSQ-13-009. CERN-EP-2018-225.

doi: 10.1140/epjc/s10052-019-6774-8.

CMS Collaboration.

**Measurement of inclusive and differential Higgs boson production cross sections in the diphoton decay channel in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 1901(01):183, and PUBDB-2019-02051, CMS-HIG-17-025. CERN-EP-2018-166. arXiv:1807.03825.

doi: 10.1007/JHEP01(2019)183.

CMS Collaboration.

**Measurement of inclusive very forward jet cross sections in proton-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Journal of high energy physics*, 1905(05):043, and PUBDB-2019-02323, arXiv:1812.01691. CMS-FSQ-17-001. CERN-EP-2018-325.

doi: 10.1007/JHEP05(2019)043.

CMS Collaboration.

**Measurement of nuclear modification factors of  $\Upsilon(1S)$ ,  $\Upsilon(2S)$ , and  $\Upsilon(3S)$  mesons in PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physics letters / B*, 790:270, and PUBDB-2019-00856, CMS-HIN-16-023. CERN-EP-2018-110. arXiv:1805.09215.

doi: 10.1016/j.physletb.2019.01.006.

CMS Collaboration.

**Measurement of prompt  $\psi(2S)$  production cross sections in proton-lead and proton-proton collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physics letters / B*, 790:509, and PUBDB-2019-02048, CMS-HIN-16-015. CERN-EP-2018-056. arXiv:1805.02248.

doi: 10.1016/j.physletb.2019.01.058.

CMS Collaboration.

**Measurement of the average very forward energy as a function of the track multiplicity at central pseudorapidities in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*The European physical journal / C*, C79(11):893, and PUBDB-2019-04489, arXiv:1908.01750. CMS-FSQ-18-001. CERN-EP-2019-146. CMS-FSQ-18-001-003.

doi: 10.1140/epjc/s10052-019-7402-3.

CMS Collaboration.

**Measurement of the differential Drell-Yan cross section in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 2019(12):59, and PUBDB-2019-05484, arXiv:1812.10529. CMS-SMP-17-001. CERN-EP-2018-320.

doi: 10.1007/JHEP12(2019)059.

CMS Collaboration.

**Measurement of the top quark mass in the all-jets final state at  $\sqrt{s} = 13$  TeV and combination with the lepton+jets channel.**

*The European physical journal / C*, 79(4):313, and PUBDB-2019-02109, arXiv:1812.10534. CMS-TOP-17-008. CERN-EP-2018-310.

doi: 10.1140/epjc/s10052-019-6788-2.

CMS Collaboration.

**Measurement of the top quark polarization and  $t\bar{t}$  spin correlations using dilepton final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review / D*, D100(7):072002, and PUBDB-2019-03693, arXiv:1907.03729. CMS-TOP-18-006. CERN-EP-2019-073.

doi: 10.1103/PhysRevD.100.072002.

CMS Collaboration.

**Measurement of the top quark Yukawa coupling from  $t\bar{t}$  kinematic distributions in the lepton+jets final state in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review / D*, D100(7):072007, and PUBDB-2019-03930, arXiv:1907.01590. CMS-TOP-17-004. CERN-EP-2019-119.

doi: 10.1103/PhysRevD.100.072007.

CMS Collaboration.

**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.**

*The European physical journal / C*, 79(5):368, and PUBDB-2019-02324, arXiv:1812.10505. CMS-TOP-17-001. CERN-EP-2018-317.

doi: 10.1140/epjc/s10052-019-6863-8.

CMS Collaboration.

**Measurements of differential Z boson production cross sections in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 2019(12):61, and PUBDB-2019-05516, arXiv:1909.04133. CMS-SMP-17-010. CERN-EP-2019-175.

doi: 10.1007/JHEP12(2019)061.

CMS Collaboration.

**Measurements of properties of the Higgs boson decaying to a W boson pair in pp collisions at  $\sqrt{s} = 13$  TeV.**

*Physics letters / B*, 791:96, and PUBDB-2019-02049, CMS-HIG-16-042. CERN-EP-2018-141. arXiv:1806.05246.

doi: 10.1016/j.physletb.2018.12.073.

CMS Collaboration.

**Measurements of the Higgs boson width and anomalous  $HVV$  couplings from on-shell and off-shell production in the four-lepton final state.**

*Physical review / D*, 99(11):112003, and PUBDB-2019-02801, arXiv:1901.00174. CMS-HIG-18-002. CERN-EP-2018-329.

doi: 10.1103/PhysRevD.99.112003.

CMS Collaboration.

**Measurements of  $t\bar{t}$  differential cross sections in proton-proton collisions at  $\sqrt{s} = 13$  TeV using events containing two leptons.**

*Journal of high energy physics*, 1902(02):149, and PUBDB-2019-02796, arXiv:1811.06625. CMS-TOP-17-014. CERN-EP-2018-252.

doi: 10.1007/JHEP02(2019)149.

CMS Collaboration.

**Non-Gaussian elliptic-flow fluctuations in PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV.**

*Physics letters / B*, 789:643, and PUBDB-2019-00855, CMS-HIN-16-019. CERN-EP-2017-268. arXiv:1711.05594. doi: 10.1016/j.physletb.2018.11.063.

CMS Collaboration.

**Observation of nuclear modifications in  $W^\pm$  boson production in pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV.**

*Physics letters / B*, 2019:135048, and PUBDB-2019-03948, arXiv:1905.01486. CMS-HIN-17-007. CERN-EP-2018-283. doi: 10.1016/j.physletb.2019.135048.

CMS Collaboration.

**Observation of prompt  $J/\psi$  meson elliptic flow in high-multiplicity pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV.**

*Physics letters / B*, 791:172, and PUBDB-2019-02066, arXiv:1810.01473. CMS-HIN-18-010. CERN-EP-2018-256. doi: 10.1016/j.physletb.2019.02.018.

CMS Collaboration.

**Observation of single top quark production in association with a Z boson in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review letters*, 122(13):132003, and PUBDB-2019-02101, arXiv:1812.05900. CMS-TOP-18-008. CERN-EP-2018-328. doi: 10.1103/PhysRevLett.122.132003.

CMS Collaboration.

**Performance of missing transverse momentum reconstruction in proton-proton collisions at  $\sqrt{s} = 13$  TeV using the CMS detector.**

*Journal of Instrumentation*, 14(07):P07004, and PUBDB-2019-02808, arXiv:1903.06078. CMS-JME-17-001. CERN-EP-2018-335. doi: 10.1088/1748-0221/14/07/P07004.

CMS Collaboration.

**Pseudorapidity distributions of charged hadrons in xenon-xenon collisions at  $\sqrt{s_{NN}} = 5.44$  TeV.**

*Physics letters / B*, 2019:135049, and PUBDB-2019-03881, arXiv:1902.03603. CMS-HIN-17-006. CERN-EP-2018-294. doi: 10.1016/j.physletb.2019.135049.

CMS Collaboration.

**Search for a heavy pseudoscalar boson decaying to a Z and a Higgs boson at  $\sqrt{s} = 13$  TeV.**

*The European physical journal / C*, 79(7):564, and PUBDB-2019-02806, arXiv:1903.00941. CMS-HIG-18-005. CERN-EP-2018-343. doi: 10.1140/epjc/s10052-019-7058-z.

CMS Collaboration.

**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.**

*The European physical journal / C*, 79(3):208, and PUBDB-2019-02105, arXiv:1812.06489. CMS-B2G-17-015. CERN-EP-2018-313. doi: 10.1140/epjc/s10052-019-6688-5.

CMS Collaboration.

**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.**

*Physical review letters*, 123(13):131802, and PUBDB-2019-03944, arXiv:1905.07453. CMS-HIG-18-020. CERN-EP-2019-083. doi: 10.1103/PhysRevLett.123.131802.

CMS Collaboration.

**Search for a low-mass  $\tau^+\tau^-$  resonance in association with a bottom quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 1905(05):210, and PUBDB-2019-02810, arXiv:1903.10228. CMS-HIG-17-014. CERN-EP-2019-035. doi: 10.1007/JHEP05(2019)210.

CMS Collaboration.

**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.**

*Physics letters / B*, 793:320, and PUBDB-2019-02792, arXiv:1811.08459. CMS-HIG-17-013. CERN-EP-2018-207. doi: 10.1016/j.physletb.2019.03.064.

CMS Collaboration.

**Search for a  $W'$  boson decaying to a  $\tau$  lepton and a neutrino in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physics letters / B*, 792:107, and PUBDB-2019-02052, arXiv:1807.11421. CMS-EXO-17-008. CERN-EP-2018-202. doi: 10.1016/j.physletb.2019.01.069.

CMS Collaboration.

**Search for a  $W'$  boson decaying to a vector-like quark and a top or bottom quark in the all-jets final state.**

*Journal of high energy physics*, 1903(03):127, and PUBDB-2019-02794, arXiv:1811.07010. CMS-B2G-18-001. CERN-EP-2018-279. doi: 10.1007/JHEP03(2019)127.

CMS Collaboration.

**Search for anomalous electroweak production of vector boson pairs in association with two jets in proton-proton collisions at 13 TeV.**

*Physics letters / B*, 798:37, and PUBDB-2019-03947, arXiv:1905.07445. CMS-SMP-18-006. CERN-EP-2019-089. doi: 10.1016/j.physletb.2019.134985.

CMS Collaboration.

**Search for anomalous triple gauge couplings in WW and WZ production in lepton + jet events in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 2019(12):62, and PUBDB-2019-05495, arXiv:1907.08354. CMS-SMP-18-008. CERN-EP-2019-137. doi: 10.1007/JHEP12(2019)062.

CMS Collaboration.

**Search for associated production of a Higgs boson and a single top quark in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review / D*, 99(9):092005, and PUBDB-2019-02791, arXiv:1811.09696. CMS-HIG-18-009. CERN-EP-2018-305. doi: 10.1103/PhysRevD.99.092005.

CMS Collaboration.

**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.**

*Journal of high energy physics*, 1907(07):142, and PUBDB-2019-03410, arXiv:1903.04560. CMS-HIG-18-014. CERN-EP-2019-025.

doi: 10.1007/JHEP07(2019)142.

CMS Collaboration.

**Search for contact interactions and large extra dimensions in the dilepton mass spectra from proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 1904(04):114, and PUBDB-2019-02108, arXiv:1812.10443. CMS-EXO-17-025. CERN-EP-2018-326.

doi: 10.1007/JHEP04(2019)114.

CMS Collaboration.

**Search for dark matter in events with a leptoquark and missing transverse momentum in proton-proton collisions at 13 TeV.**

*Physics letters / B*, 795:76, and PUBDB-2019-02790, arXiv:1811.10151. CMS-EXO-17-015. CERN-EP-2018-278.

doi: 10.1016/j.physletb.2019.05.046.

CMS Collaboration.

**Search for dark matter particles produced in association with a top quark pair at  $\sqrt{s} = 13$  TeV.**

*Physical review letters*, 122(1):011803, and PUBDB-2019-00551, arXiv:1807.06522. CMS-EXO-16-049. CERN-EP-2018-183.

doi: 10.1103/PhysRevLett.122.011803.

CMS Collaboration.

**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.**

*The European physical journal / C*, 79(3):280, and PUBDB-2019-02795, arXiv:1811.06562. CMS-EXO-16-050. CERN-EP-2018-287.

doi: 10.1140/epjc/s10052-019-6730-7.

CMS Collaboration.

**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.**

*Journal of high energy physics*, 1903(03):141, and PUBDB-2019-02111, arXiv:1901.01553. CMS-EXO-18-010. CERN-EP-2018-311.

doi: 10.1007/JHEP03(2019)141.

CMS Collaboration.

**Search for dark photons in decays of Higgs bosons produced in association with Z bosons in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 2019(10):139, and PUBDB-2019-03919, arXiv:1908.02699. CMS-EXO-19-007. CERN-EP-2019-159.

doi: 10.1007/JHEP10(2019)139.

CMS Collaboration.

**Search for excited leptons in  $\ell\ell\gamma$  final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 1904(04):015, and PUBDB-2019-02797, arXiv:1811.03052. CMS-EXO-18-004. CERN-EP-2018-280.

doi: 10.1007/JHEP04(2019)015.

CMS Collaboration.

**Search for heavy Majorana neutrinos in same-sign dilepton channels in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 1901(01):122, and PUBDB-2019-00858, CMS-EXO-17-028. CERN-EP-2018-159. arXiv:1806.10905.

doi: 10.1007/JHEP01(2019)122.

CMS Collaboration.

**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.**

*Journal of high energy physics*, 1903(03):170, and PUBDB-2019-02087, arXiv:1811.00806. CMS-EXO-17-016. CERN-EP-2018-272.

doi: 10.1007/JHEP03(2019)170.

CMS Collaboration.

**Search for heavy resonances decaying into two Higgs bosons or into a Higgs boson and a W or Z boson in proton-proton collisions at 13 TeV.**

*Journal of high energy physics*, 1901(01):051, and PUBDB-2019-00859, arXiv:1808.01365. CMS-B2G-17-006. CERN-EP-2018-182.

doi: 10.1007/JHEP01(2019)051.

CMS Collaboration.

**Search for Higgs and Z boson decays to  $J/\psi$  or  $\Upsilon$  pairs in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
**Search for Higgs and Z boson decays to  $J/\psi$  or  $\Upsilon$  pairs in the four-muon final state in proton-proton collisions at  $s=13$ TeV.**

*Physics letters / B*, 797:134811, and PUBDB-2019-03941, arXiv:1905.10408. CMS-HIG-18-025. CERN-EP-2019-082.

doi: 10.1016/j.physletb.2019.134811.

CMS Collaboration.

**Search for Higgs boson pair production in the  $\gamma\gamma b\bar{b}$  final state in pp collisions at  $\sqrt{s} = 13$  TeV.**

*Physics letters / B*, 788:7, and PUBDB-2018-05796, arXiv:1806.00408. CMS-HIG-17-008. CERN-EP-2017-343.

doi: 10.1016/j.physletb.2018.10.056.

CMS Collaboration.

**Search for invisible decays of a Higgs boson produced through vector boson fusion in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
**lhc.**

*Physics letters / B*, 793:520, and PUBDB-2019-02061, arXiv:1809.05937. CMS-HIG-17-023. CERN-EP-2018-139.

doi: 10.1016/j.physletb.2019.04.025.

CMS Collaboration.

**Search for long-lived particles decaying into displaced jets in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review / D*, 99(3):032011, and PUBDB-2019-02793,

arXiv:1811.07991. CMS-EXO-18-007. CERN-EP-2018-289.  
doi: 10.1103/PhysRevD.99.032011.

CMS Collaboration.

**Search for long-lived particles using nonprompt jets and missing transverse momentum with proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physics letters / B*, 797:134876, and PUBDB-2019-03411, arXiv:1906.06441. CMS-EXO-19-001. CERN-EP-2019-113.  
doi: 10.1016/j.physletb.2019.134876.

CMS Collaboration.

**Search for low-mass resonances decaying into bottom quark-antiquark pairs in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review / D*, D99(1):012005, and PUBDB-2020-00494, arXiv:1810.11822. CMS-EXO-17-024. CERN-EP-2018-251.  
doi: 10.1103/PhysRevD.99.012005.

CMS Collaboration.

**Search for MSSM Higgs bosons decaying to  $\mu^+ \mu^-$  in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physics letters / B*, 798:134992, and PUBDB-2019-03923, arXiv:1907.03152. CMS-HIG-18-010. CERN-EP-2019-109.  
doi: 10.1016/j.physletb.2019.134992.

CMS Collaboration.

**Search for narrow  $H\gamma$  resonances in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*Physical review letters*, 122(8):081804, and PUBDB-2019-02053, arXiv:1808.01257. CMS-EXO-17-019. CERN-EP-2018-200.

doi: 10.1103/PhysRevLett.122.081804.

CMS Collaboration.

**Search for new physics in top quark production in dilepton final states in proton-proton collisions at  $\sqrt{s} = 13$  TeV.**

*The European physical journal / C*, 79(11):886, and PUBDB-2019-03957, arXiv:1903.11144. CMS-TOP-17-020. CERN-EP-2019-018.

doi: 10.1140/epjc/s10052-019-7387-y.

CMS Collaboration.

**Search for nonresonant Higgs boson pair production in the  $b\bar{b}b\bar{b}$  final state at  $\sqrt{s} = 13$  TeV.**

*Journal of high energy physics*, 1904(04):112, and PUBDB-2019-02085, arXiv:1810.11854. CMS-HIG-17-017. CERN-EP-2018-269.

doi: 10.1007/JHEP04(2019)112.

CMS Collaboration.

**Search for pair production of first-generation scalar leptoquarks at  $\sqrt{s} = 13$  TeV.**

*Physical review / D*, 99(5):052002, and PUBDB-2019-02798, arXiv:1811.01197. CMS-EXO-17-009. CERN-EP-2018-265.

doi: 10.1103/PhysRevD.99.052002.

CMS Collaboration.

**Search for pair production of vectorlike quarks in the fully hadronic final state.**

*Physical review / D*, 100(7):072001, and PUBDB-2019-03934, arXiv:1906.11903. CMS-B2G-18-005. CERN-EP-2019-129.  
doi: 10.1103/PhysRevD.100.072001.

CMS Collaboration.

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