Bibliographie de thèse

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Références

- [1] G. AAD & coll. « Combined measurement of the Higgs boson mass in pp collisions at $\sqrt{s}=7$ and 8 TeV with the ATLAS and CMS Experiments ». Physical Review Letters 114.19 (mai 2015). DOI: 10.1103/physrevlett.114.191803. URL: http://dx.doi.org/10.1103/PhysRevLett.114.191803.
- [2] G. AAD & coll. « Measurements of the Higgs boson production and decay rates and constraints on its couplings from a combined ATLAS and CMS analysis of the LHC pp collision data at $\sqrt{s} = 7$ and 8 TeV ». *Journal of High Energy Physics* **08** (août 2016). DOI: 10.1007/jhep08(2016) 045. URL: http://dx.doi.org/10.1007/JHEP08(2016)045.
- [3] M. Abadi & coll. TensorFlow: Large-scale machine learning on heterogeneous distributed systems. Software available from tensorflow.org. 2015. URL: https://www.tensorflow.org/.
- [4] P. A. R. Ade & coll. « Planck 2013 results. I. Overview of products and scientific results ». *Astronomy & Astrophysics* **571** (oct. 2014). DOI: 10.1051/0004-6361/201321529. URL: http://dx.doi.org/10.1051/0004-6361/201321529.
- [5] S. ALIOLI & coll. « A general framework for implementing NLO calculations in shower Monte Carlo programs: the POWHEG BOX ». *Journal of High Energy Physics* **06** (2010). DOI: 10.1007/jhep06(2010)043. arXiv: 1002.2581 [hep-ph].
- [6] J. Allison & coll. « Geant 4 developments and applications ». *IEEE Transactions on Nuclear Science* **53**.1 (fév. 2006), p. 270-278. doi: 10.1109/tns.2006.869826.
- [7] J. Alwall & coll. « MadGraph 5 : Going Beyond ». *Journal of High Energy Physics* **06** (2011). DOI: 10.1007/jhep06(2011)128. arXiv: 1106.0522 [hep-ph].
- [8] B. Andersson & coll. « Parton fragmentation and string dynamics » (avr. 1983). url: http://cds.cern.ch/record/143980.
- [9] J. Andrejkovic & coll. « Data-driven background estimation of fake-tau backgrounds in di-tau final states with 2016 and 2017 data ». CMS analysis Note (oct. 2018).
- [10] P. Arce & coll. « The network of photodetectors and diode lasers of the CMS Link alignment system ». *Nuclear Instruments and Methods in Physics Research* **A896** (2018), p. 1-23. DOI: 10.1016/j.nima.2018.04.004. URL: http://cds.cern.ch/record/2637152.
- [11] G. Arnison & coll. « Experimental observation of isolated large transverse energy electrons with associated missing energy at $\sqrt{s}=540\,\mathrm{GeV}$ ». Physics Letters B122.1 (1983), p. 103-116. DOI: https://doi.org/10.1016/0370-2693(83)91177-2. URL: http://www.sciencedirect.com/science/article/pii/0370269383911772.
- [12] G. Arnison & coll. « Experimental observation of lepton pairs of invariant mass around $95\,\text{GeV}\cdot c^{-2}$ at the CERN SPS collider ». *Physics Letters* **B126**.5 (1983), p. 398-410. DOI: https://doi.org/10.1016/0370-2693(83)90188-0. URL: http://www.sciencedirect.com/science/article/pii/0370269383901880.
- [13] G. Arnison & coll. «Further evidence for charged intermediate vector bosons at the SPS collider ». *Physics Letters* **B129**.3 (1983), p. 273-282. DOI: https://doi.org/10.1016/0370-2693(83)90860-2. URL: http://www.sciencedirect.com/science/article/pii/0370269383908602.
- [14] P. BAGNAIA & coll. « Evidence for $Z^0 \to e^+e^-$ at the CERN pp collider ». Physics Letters **B129**.1 (1983), p. 130-140. DOI: https://doi.org/10.1016/0370-2693(83)90744-X. URL: http://www.sciencedirect.com/science/article/pii/037026938390744X.

- [15] R. D. Ball & coll. « Parton distributions for the LHC Run II ». *Journal of High Energy Physics* **2015**.4 (avr. 2015). DOI: 10.1007/jhep04(2015)040. URL: http://dx.doi.org/10.1007/JHEP04(2015)040.
- [16] M. Banner & coll. « Observation of single isolated electrons of high transverse momentum in events with missing transverse energy at the CERN pp collider ». Physics Letters B122.5 (1983), p. 476-485. DOI: https://doi.org/10.1016/0370-2693(83)91605-2. URL: http://www.sciencedirect.com/science/article/pii/0370269383916052.
- [17] D. Barney. Sketchup images highlighting the sub-detectors. CMS Document Database. Nov. 2013. URL: https://cms-docdb.cern.ch/cgi-bin/PublicDocDB/ShowDocument?docid=11982.
- [18] P. BÄRTSCHI & coll. « Reconstruction of τ lepton pair invariant mass using an artificial neural network ». Nuclear Instruments and Methods in Physics Research A929 (2019), p. 29-33. DOI: https://doi.org/10.1016/j.nima.2019.03.029. URL: http://www.sciencedirect.com/science/article/pii/S0168900219303377.
- [19] G. Bellini, I. Bigi & P. Dornan. « Lifetimes of charm and beauty hadrons ». *Physics Reports* **289**.1 (1997), p. 1-155. doi: https://doi.org/10.1016/S0370-1573(97)00005-7. URL: http://www.sciencedirect.com/science/article/pii/S0370157397000057.
- [20] J. Bellm & coll. « Herwig 7.0/Herwig++ 3.0 release note ». European Physical Journal C76.196 (avr. 2016). DOI: 10.1140/epjc/s10052-016-4018-8.
- [21] M. BENEDIKT & coll. « The LHC Injector Chain ». LHC Design Report. 3. CERN Yellow Reports: Monographs. Geneva: CERN, 2004. DOI: 10.5170/CERN-2004-003-V-3. URL: https://cds.cern.ch/record/823808.
- [22] C. Bernet. « Caractérisation des détecteurs Micromégas et mesure de la polarisation des gluons sur COMPASS ». Thèse de doct. Paris 7 Denis Diderot, mai 2004. URL: http://cds.cern.ch/record/1482660.
- [23] C. Bernet. « Reconstruction du flux de particules et mise en évidence de la désintégration du boson de Higgs en paire de τ avec CMS ». Thèse d'HDR (2017). url : https://drive.google.com/open?id=0B3nnTYQibadjVkVvUi03cGRiYlk.
- [24] H. A. Bethe. « Molière's Theory of Multiple Scattering ». *Physical Review* **89** (6 mar. 1953). DOI: 10.1103/PhysRev.89.1256. URL: https://link.aps.org/doi/10.1103/PhysRev.89.1256.
- [25] L. BIANCHINI & coll. « Reconstruction of the Higgs mass in $H \to \tau\tau$ Events by Dynamical Likelihood techniques ». *Journal of Physics : Conference Series* **513**.2 (juin 2014). DOI : 10.1088/1742-6596/513/2/022035. URL : https://doi.org/10.1088%2F1742-6596%2F513%2F2%2F022035.
- [26] P. Bolzoni & coll. « Vector boson fusion at next-to-next-to-leading order in QCD: Standard model Higgs boson and beyond ». *Physical Review* **D85** (3 fév. 2012). DOI: 10.1103/PhysRevD. 85.035002. URL: https://link.aps.org/doi/10.1103/PhysRevD.85.035002.
- [27] P. S. L. BOOTH. «The DELPHI Experiment ». *Philosophical Transactions : Physical Sciences and Engineering* **336**.1642 (1991), p. 213-222. URL: http://www.jstor.org/stable/53784.
- [28] O. S. Brüning & coll. « The LHC Infrastructure and General Services ». LHC Design Report. 2. CERN Yellow Reports: Monographs. Geneva: CERN, 2004. DOI: 10.5170/CERN-2004-003-V-2. URL: https://cds.cern.ch/record/815187.
- [29] O. S. Brüning & coll. « The LHC Main Ring ». LHC Design Report. 1. CERN Yellow Reports: Monographs. Geneva: CERN, 2004. DOI: 10.5170/CERN-2004-003-V-1. URL: https://cds.cern.ch/record/782076.
- [30] A. Buckley & coll. « General-purpose event generators for LHC physics ». *Physics Reports* **504** (jan. 2011). DOI: 10.1016/j.physrep.2011.03.005. URL: http://cds.cern.ch/record/1322340.

- [31] B. Bullock, K. Hagiwara & A. Martin. « Tau polarization and its correlations as a probe of new physics ». *Nuclear Physics* B395.3 (1993), p. 499-533. DOI: https://doi.org/10.1016/0550-3213(93)90045-Q. URL: http://www.sciencedirect.com/science/article/pii/055032139390045Q.
- [32] N. Cabibbo. « Unitary Symmetry and Leptonic Decays ». *Physical Review Letters* **10** (12 juin 1963), p. 531-533. doi: 10.1103/PhysRevLett.10.531. url: https://link.aps.org/doi/10.1103/PhysRevLett.10.531.
- [33] N. Cabibbo. « Unitary Symmetry and Nonleptonic Decays ». *Physical Review Letters* **12** (2 jan. 1964), p. 62-63. doi: 10.1103/PhysRevLett.12.62. url: https://link.aps.org/doi/10.1103/PhysRevLett.12.62.
- [34] M. CACCIARI & G. P. SALAM. « Dispelling the N^3 myth for the k_T jet-finder ». *Physics Letters* **B641**.1 (sept. 2006), p. 57-61. doi: 10.1016/j.physletb.2006.08.037. url: http://dx.doi.org/10.1016/j.physletb.2006.08.037.
- [35] M. CACCIARI & G. P. SALAM. « Pileup subtraction using jet areas ». *Physics Letters* **B659** (jan. 2008), p. 119-126. doi: 10.1016/j.physletb.2007.09.077. URL: http://dx.doi.org/10.1016/j.physletb.2007.09.077.
- [36] M. CACCIARI, G. P. SALAM & G. SOYEZ. « FASTJET user manual ». European Physical Journal C72 (nov. 2012). DOI: 10.1140/epjc/s10052-012-1896-2. arXiv: 1111.6097 [hep-ph].
- [37] M. CACCIARI, G. P. SALAM & G. SOYEZ. « The Anti- k_T jet clustering algorithm ». Journal of High Energy Physics **04** (avr. 2008). DOI: 10.1088/1126-6708/2008/04/063. arXiv: 0802.1189 [hep-ph].
- [38] M. CARENA & coll. « MSSM Higgs boson searches at the LHC: benchmark scenarios after the discovery of a Higgs-like particle ». European Physical Journal C73.9 (sept. 2013). DOI: 10.1140/epjc/s10052-013-2552-1. URL: http://dx.doi.org/10.1140/epjc/s10052-013-2552-1.
- [39] CERN. MapCERN. url: https://maps.web.cern.ch/.
- [40] CERN. The first touchscreen used at CERN. URL: https://www.youtube.com/watch?v=tQe5dlzScwU.
- [41] CERN. The World Wide Web Project. 1989. URL: http://info.cern.ch/hypertext/WWW/TheProject.html.
- [42] F. CHOLLET & coll. KERAS. https://keras.io. 2015.
- [43] N. D. Christensen, T. Han & S. Su. « MSSM Higgs Bosons at The LHC ». *Physical Review* **D85** (2012). DOI: 10.1103/PhysRevD.85.115018. arXiv: 1203.3207 [hep-ph].
- [44] J. H. Christenson & coll. « Evidence for the 2π Decay of the K_2^0 Meson ». Physical Review Letters 13 (4 juil. 1964), p. 138-140. DOI: 10.1103/PhysRevLett.13.138. URL: https://link.aps.org/doi/10.1103/PhysRevLett.13.138.
- [45] D. CLOWE & coll. « A Direct Empirical Proof of the Existence of Dark Matter ». *Astrophysical Journal* **648**.2 (août 2006). DOI: 10.1086/508162. URL: http://dx.doi.org/10.1086/508162.
- [46] CMS. « The CMS Particle Flow Algorithm ». EPJ Web of Conferences 191 (2018). DOI: 10.1051/epjconf/201819102016. URL: https://cds.cern.ch/record/2678077.
- [47] Dask: Scalable analytics in Python. url: https://dask.org/.
- [48] A. DAVIDSON & K. C. Wali. « Family mass hierarchy from universal seesaw mechanism ». *Physical Review Letters* **60** (18 mai 1988), p. 1813-1816. DOI: 10.1103/PhysRevLett.60.1813. URL: https://link.aps.org/doi/10.1103/PhysRevLett.60.1813.
- [49] S. Dawson, A. DJOUADI & M. SPIRA. « QCD Corrections to Supersymmetric Higgs Boson Production: The Role of Squark Loops ». *Physical Review Letters* 77.1 (juil. 1996), p. 16-19. DOI: 10.1103/physrevlett.77.16. URL: http://dx.doi.org/10.1103/PhysRevLett.77.16.

- [50] DELPHI, OPAL, ALEPH, LEP Working Group for Higgs Boson Searches, L3. « Search for neutral MSSM Higgs bosons at LEP ». *European Physical Journal* C47 (2006), p. 547-587. DOI: 10.1140/epjc/s2006-02569-7. arXiv: hep-ex/0602042 [hep-ex].
- [51] A. DJOUADI & coll. « The post-Higgs MSSM scenario : Habemus MSSM? » European Physical Journal C 73.12 (19 juil. 2013). DOI: 10.1140/epjc/s10052-013-2650-0. arXiv: 1307.5205v1 [hep-ph].
- [52] A. Dominguez & coll. CMS Technical Design Report for the Pixel Detector Upgrade. Rapp. tech. Sept. 2012. URL: https://cds.cern.ch/record/1481838.
- [53] P. J. DORNAN. «The ALEPH Experiment ». *Philosophical Transactions: Physical Sciences and Engineering* **336**.1642 (1991), p. 201-211. URL: http://www.jstor.org/stable/53783.
- [54] S. Dürr & coll. « Ab Initio Determination of Light Hadron Masses ». *Science* **322**.5905 (nov. 2008), p. 1224-1227. doi: 10.1126/science.1163233.
- [55] F. ENGLERT & R. BROUT. « Broken symmetry and the mass of gauge vector mesons ». *Physical Review Letters* 13.9 (9 août 1964), p. 321-323. DOI: 10.1103/PhysRevLett.13.321. URL: https://link.aps.org/doi/10.1103/PhysRevLett.13.321.
- [56] J. de FAVEREAU & coll. « DELPHES 3 : a modular framework for fast simulation of a generic collider experiment ». *Journal of High Energy Physics* **2** (fév. 2014). DOI : 10.1007/jhep02(2014) 057. URL : http://dx.doi.org/10.1007/JHEP02(2014)057.
- [57] S. Frixione, P. Nason & B. R. Webber. « Matching NLO QCD and parton showers in heavy flavour production ». *Journal of High Energy Physics* 8 (août 2003). DOI: 10.1088/1126-6708/2003/08/007. URL: http://dx.doi.org/10.1088/1126-6708/2003/08/007.
- [58] J. GAO, L. HARLAND-LANG & J. ROJO. « The structure of the proton in the LHC precision era ». *Physics Reports* **742** (mai 2018). DOI: 10.1016/j.physrep.2018.03.002. URL: http://dx.doi.org/10.1016/j.physrep.2018.03.002.
- [59] M. Gell-Mann, P. Ramond & R. Slansky. « Complex Spinors and Unified Theories » (1979). URL: http://cds.cern.ch/record/133618.
- [60] S. L. Glashow. « Partial-symmetries of weak interactions ». *Nuclear Physics* **22**.4 (1961), p. 579-588. DOI: https://doi.org/10.1016/0029-5582(61)90469-2.
- [61] V. Gori. «The CMS High Level Trigger». International Journal of Modern Physics: Conference Series 31 (mar. 2014). DOI: 10.1142/S201019451460297X. URL: https://cds.cern.ch/ record/1666961.
- [62] D. Guest & coll. « Jet flavor classification in high-energy physics with deep neural networks ». *Physical Review* **D94**.11 (déc. 2016). DOI: 10.1103/physrevd.94.112002. URL: http://dx.doi.org/10.1103/PhysRevD.94.112002.
- [63] J. F. Gunion & coll. Errata for "The Higgs Hunter's Guide". Rapp. tech. hep-ph/9302272. Fév. 1993. URL: https://cds.cern.ch/record/559892.
- [64] J. F. Gunion & coll. *The Higgs hunter's guide*. T. **80**. Upton, NY: Brookhaven Nat. Lab., 1989. URL: https://cds.cern.ch/record/425736.
- [65] G. S. Guralnik, C. R. Hagen & T. W. B. Kibble. «Global Conservation Laws and Massless Particles ». *Physical Review Letters* **13**.20 (20 nov. 1964), p. 585-587. doi: 10.1103/PhysRevLett. 13.585. url: https://link.aps.org/doi/10.1103/PhysRevLett.13.585.
- [66] F. J. HASERT & coll. « Observation of neutrino-like interactions without muon or electron in the Gargamelle neutrino experiment ». *Nuclear Physics* **B73**.1 (1974), p. 1-22. DOI: 10.1016/0550-3213(74)90038-8. URL: http://cds.cern.ch/record/203096.
- [67] F. J. HASERT & coll. « Search for elastic muon neutrino electron scattering ». *Physics Letters* **B46**.1 (1973), p. 121-124. doi: 10.1016/0370-2693(73)90494-2. url: http://cds.cern.ch/record/243640.

- [68] F. HASERT & coll. « Observation of neutrino-like interactions without muon or electron in the gargamelle neutrino experiment ». *Physics Letters* **B46**.1 (1973), p. 138-140. DOI: 10.1016/0370-2693(73)90499-1. URL: http://www.sciencedirect.com/science/article/pii/0370269373904991.
- [69] P. W. Higgs. « Broken symmetries and the masses of gauge bosons ». *Physics Letters* **13**.16 (oct. 1964). DOI: 10.1103/physrevlett.13.508.
- [70] P. W. Higgs. « Broken symmetries, massless particles and gauge fields ». Physics Letters 12.2 (sept. 1964). DOI: 10.1016/0031-9163(64)91136-9. URL: https://cds.cern.ch/record/641590.
- [71] M. Kobayashi & T. Maskawa. « CP-Violation in the Renormalizable Theory of Weak Interaction ». *Progress of Theoretical Physics* **49**.2 (fév. 1973), p. 652-657. doi: 10.1143/PTP.49.652. eprint: https://academic.oup.com/ptp/article-pdf/49/2/652/5257692/49-2-652.pdf. URL: https://doi.org/10.1143/PTP.49.652.
- [72] A. J. LARKOSKI. « An Unorthodox Introduction to QCD » (2017). arXiv: 1709.06195 [hep-ph].
- [73] LHC Higgs Cross Section Working Group. « Differential Distributions ». *Handbook of LHC Higgs Cross Sections*. **2**. CERN Yellow Reports : Monographs. Geneva : CERN, 2012. DOI: 10.5170/CERN-2012-002. URL: https://cds.cern.ch/record/1416519.
- [74] LHC Higgs Cross Section Working Group. « Inclusive Observables ». *Handbook of LHC Higgs Cross Sections*. 1. CERN Yellow Reports: Monographs. Geneva: CERN, 2011. DOI: 10.5170/CERN-2011-002. URL: https://cds.cern.ch/record/1318996.
- [75] LHC Higgs Cross Section Working Group. « Deciphering the Nature of the Higgs Sector ». Handbook of LHC Higgs Cross Sections. 4. CERN Yellow Reports: Monographs. Geneva: CERN, oct. 2016. DOI: 10.23731/CYRM-2017-002. URL: http://cds.cern.ch/record/2227475.
- [76] LHC Higgs Cross Section Working Group. « Higgs Properties ». *Handbook of LHC Higgs Cross Sections*. **3**. CERN Yellow Reports: Monographs. Geneva: CERN, 2013. DOI: 10.5170/CERN-2013-004. URL: https://cds.cern.ch/record/1559921.
- [77] Long term LHC schedule. URL: https://lhc-commissioning.web.cern.ch/.
- [78] Z. Maki, M. Nakagawa & S. Sakata. «Remarks on the Unified Model of Elementary Particles». *Progress of Theoretical Physics* 28.5 (nov. 1962), p. 870-880. doi:10.1143/PTP.28.870. eprint:https://academic.oup.com/ptp/article-pdf/28/5/870/5258750/28-5-870.pdf. URL:https://doi.org/10.1143/PTP.28.870.
- [79] S. P. Martin. « A Supersymmetry primer ». Advanced Series on Directions in High Energy Physics (juil. 1998), p. 1-98. doi: 10.1142/9789812839657_0001. URL: http://dx.doi.org/10.1142/9789812839657_0001.
- [80] S. Mele. « The Measurement of the Number of Light Neutrino Species at LEP ». Advanced Series on Directions in High Energy Physics 23 (2015), p. 89-106. DOI: 10.1142/9789814644150_0004. URL: http://cds.cern.ch/record/2103251.
- [81] A. Mertens. « New features in Delphes 3 ». Journal of Physics: Conference Series 608.1 (2015). Sous la dir. de L. Fiala, M. Lokajicek & N. Tumova. doi: 10.1088/1742-6596/608/1/012045.
- [82] A. MICHELINI. « OPAL Detector Performance ». Philosophical Transactions: Physical Sciences and Engineering 336.1642 (1991), p. 237-246. URL: http://www.jstor.org/stable/53786.
- [83] R. N. Mohapatra & G. Senjanović. « Neutrino Mass and Spontaneous Parity Nonconservation ». *Physical Review Letters* **44** (14 avr. 1980), p. 912-915. doi:10.1103/PhysRevLett.44.912. URL: https://link.aps.org/doi/10.1103/PhysRevLett.44.912.
- [84] R. N. Mohapatra & G. Senjanović. « Neutrino masses and mixings in gauge models with spontaneous parity violation ». *Physical Review* **D23** (1 jan. 1981), p. 165-180. doi: 10.1103/PhysRevD.23.165. URL: https://link.aps.org/doi/10.1103/PhysRevD.23.165.

- [85] Y. NAGASHIMA. Beyond the Standard Model of Elementary Particle Physics. Weinheim: Wiley-VCH, juin 2014. URL: http://cds.cern.ch/record/1620277.
- [86] Y. NAGASHIMA. « Foundations of the Standard Model ». *Elementary Particle Physics.* **2**. Weinheim: Wiley-VCH, 2013.
- [87] Y. NAGASHIMA. « Quantum Field Theory and Particles ». *Elementary Particle Physics*. **1**. Weinheim: Wiley-VCH, 2010.
- [88] S. H. Neddermeyer & C. D. Anderson. « Note on the Nature of Cosmic-Ray Particles ». *Physical Review* 51 (10 mai 1937), p. 884-886. doi: 10.1103/PhysRev.51.884. URL: https://link.aps.org/doi/10.1103/PhysRev.51.884.
- [89] B. P. NIGAM, M. K. SUNDARESAN & T.-Y. Wu. « Theory of Multiple Scattering: Second Born Approximation and Corrections to Molière's Work ». *Physical Review* **115** (3 août 1959). DOI: 10.1103/PhysRev.115.491. URL: https://link.aps.org/doi/10.1103/PhysRev.115.491.
- [90] OPAL, DELPHI, LEP Working Group for Higgs boson searches, ALEPH, L3. « Search for the standard model Higgs boson at LEP ». *Physics Letters* **B565** (2003), p. 61-75. DOI: 10.1016/S0370-2693(03)00614-2. arXiv: hep-ex/0306033 [hep-ex].
- [91] Particle Data Group. « Review of Particle Physics ». *Chinese Physics* **C38** (2014). DOI: 10.1088/1674-1137/38/9/090001.
- [92] Particle Data Group. « Review of Particle Physics ». *Chinese Physics* **C40** (2016). DOI: 10.1088/1674-1137/40/10/100001.
- [93] Particle Data Group. « Review of Particle Physics ». *Physical Review* **D98** (août 2018). DOI: 10.1103/PhysRevD.98.030001.
- [94] S. RAYCHAUDHURI & D. P. ROY. « Charged Higgs boson search at the Fermilab Tevatron upgrade using τ polarization ». *Physical Review* **D52**.3 (3 août 1995), p. 1556-1564. DOI: 10. 1103/PhysRevD.52.1556. URL: https://link.aps.org/doi/10.1103/PhysRevD.52.1556.
- [95] G. Ridolfi, G. Ross & F. Zwirner. «Supersymmetry». Large Hadron Collider Workshop Proceedings. II. CERN. Geneva: CERN, oct. 1990, p. 606-683.
- [96] J. Rojo & coll. « The PDF4LHC report on PDFs and LHC data: results from Run I and preparation for Run II ». *Journal of Physics* **G42**.10 (sept. 2015). DOI: 10.1088/0954-3899/42/10/103103. URL: https://doi.org/10.1088%2F0954-3899%2F42%2F10%2F103103.
- [97] T. SAKUMA. 3D SketchUp images of the CMS detector. CMS Document Database. Sept. 2018. URL: https://cms-docdb.cern.ch/cgi-bin/PublicDocDB/ShowDocument?docid=13631.
- [98] G. P. SALAM. Elements of QCD for hadron colliders. 2010. arXiv: 1011.5131 [hep-ph]. URL: https://arxiv.org/pdf/1011.5131.pdf.
- [99] G. P. SALAM. «Towards jetography ». European Physical Journal C67.3-4 (mai 2010), p. 637-686. DOI: 10.1140/epjc/s10052-010-1314-6. URL: http://dx.doi.org/10.1140/epjc/s10052-010-1314-6.
- [100] G. P. SALAM & G. SOYEZ. «A practical seedless infrared-safe cone jet algorithm ». *Journal of High Energy Physics* **05** (mai 2007). DOI: 10.1088/1126-6708/2007/05/086. URL: http://dx.doi.org/10.1088/1126-6708/2007/05/086.
- [101] W. Sarle. « Neural Networks and Statistical Models ». 1994.
- [102] A. Schälicke & coll. « An event generator for particle production in high-energy collisions ». Progress in Particle and Nuclear Physics 53.1 (2004), p. 329-338. DOI: https://doi.org/10.1016/j.ppnp.2004.02.031. URL: http://www.sciencedirect.com/science/article/pii/S014664100400047X.
- [103] J. SCHECHTER & J. W. F. VALLE. « Neutrino masses in $SU(2) \times U(1)$ theories ». Physical Review D22 (9 nov. 1980), p. 2227-2235. DOI: 10.1103/PhysRevD.22.2227. URL: https://link.aps.org/doi/10.1103/PhysRevD.22.2227.
- [104] Site internet du CERN. URL: https://home.cern/.

- [105] T. SJÖSTRAND, S. MRENNA & P. SKANDS. « PYTHIA 6.4 physics and manual ». *Journal of High Energy Physics* **05** (mai 2006). DOI: 10.1088/1126-6708/2006/05/026. URL: http://dx.doi.org/10.1088/1126-6708/2006/05/026.
- [106] T. SJÖSTRAND & coll. « An Introduction to PYTHIA 8.2 ». Computer Physics Communications 191 (2015), p. 159-177. DOI: 10.1016/j.cpc.2015.01.024. arXiv: 1410.3012 [hep-ph].
- [107] T. Speer & coll. Track Reconstruction in the CMS Tracker. Rapp. tech. CMS-CR-2005-014. Geneva: CERN, juil. 2005. DOI: 10.1016/j.nima.2005.11.207. URL: http://cds.cern.ch/record/884424.
- [108] D. P. STICKLAND. « The L3 Experiment ». *Philosophical Transactions : Physical Sciences and Engineering* **336**.1642 (1991), p. 223-236. URL: http://www.jstor.org/stable/53785.
- [109] The ALICE Collaboration. « The ALICE experiment at the CERN LHC. A Large Ion Collider Experiment ». *Journal of Instrumentation* 3.S08002 (2008). DOI: 10.1088/1748-0221/3/08/S08002. URL: http://cds.cern.ch/record/1129812.
- [110] The ATLAS Collaboration. « Search for additional heavy neutral Higgs and gauge bosons in the ditau final state produced in $36\,\mathrm{fb^{-1}}$ of pp collisions at $\sqrt{s}=13\,\mathrm{TeV}$ with the ATLAS detector ». *Journal of High Energy Physics* **2018**.1 (jan. 2018). DOI: 10.1007/jhep01(2018)055. URL: http://dx.doi.org/10.1007/JHEP01(2018)055.
- [111] The ATLAS Collaboration. « Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC ». *Physics Letters* **B716**.1 (2012), p. 1-29. DOI: https://doi.org/10.1016/j.physletb.2012.08.020. URL: http://www.sciencedirect.com/science/article/pii/S037026931200857X.
- [112] The ATLAS Collaboration. « Search for the neutral Higgs bosons of the Minimal Supersymmetric Standard Model in pp collisions at $\sqrt{s} = 7 \, \text{TeV}$ with the ATLAS detector ». *Journal of High Energy Physics* **02** (2013). DOI: 10.1007/JHEP02(2013)095. arXiv: 1211.6956 [hep-ex].
- [113] The ATLAS Collaboration. « Search for heavy Higgs bosons decaying into two tau leptons with the ATLAS detector using pp collisions at $\sqrt{s}=13\,\text{TeV}$ » (2020). arXiv: 2002.12223 [hep-ex].
- [114] The ATLAS Collaboration. « The ATLAS Experiment at the CERN Large Hadron Collider ». Journal of Instrumentation 3.S08003 (2008). DOI: 10.1088/1748-0221/3/08/S08003. URL: http://cds.cern.ch/record/1129811.
- [115] The ATLAS Collaboration, The CMS Collaboration, The LHC Higgs Combination Group. Procedure for the LHC Higgs boson search combination in Summer 2011. Rapp. tech. CMS-NOTE-2011-005. ATL-PHYS-PUB-2011-11. Geneva: CERN, août 2011. URL: https://cds.cern.ch/record/1379837.
- [116] The CDF Collaboration. « Search for Higgs bosons predicted in two-Higgs-doublet models via decays to tau lepton pairs in 1,96 TeV $p\bar{p}$ collisions ». *Physical Review Letters* **103** (2009). DOI: 10.1103/PhysRevLett.103.201801. arXiv: 0906.1014 [hep-ex].
- [117] The CDF Collaboration. « Observation of top quark production in $p\bar{p}$ collisions with the collider detector at Fermilab ». *Physical Review Letters* **74**.14 (avr. 1995), p. 2626-2631. DOI: 10.1103/physrevlett.74.2626. URL: http://dx.doi.org/10.1103/PhysRevLett.74.2626.
- [118] The CMS Collaboration. « Precise mapping of the magnetic field in the CMS barrel yoke using cosmic rays ». *Journal of Instrumentation* **5** (mar. 2010). DOI: 10.1088/1748-0221/5/03/t03021. URL: http://dx.doi.org/10.1088/1748-0221/5/03/T03021.
- [119] The CMS Collaboration. « Detector Performance and Software ». CMS Physics: Technical Design Report. 1. Technical Design Report CMS. Geneva: CERN, 2006. URL: http://cds.cern.ch/ record/922757.
- [120] The CMS Collaboration. CMS TriDAS project: Technical Design Report. T. 1. Technical Design Report CMS. Geneva: CERN. url: http://cds.cern.ch/record/706847.

- [121] The CMS Collaboration. « Calibration of hadron calorimeter using isolated charged hadrons » (mai 2017). URL: https://cds.cern.ch/record/2263758.
- [122] The CMS Collaboration. « Description and performance of track and primary-vertex reconstruction with the CMS tracker ». *Journal of Instrumentation* **9** (mai 2014). DOI: 10.1088/1748-0221/9/10/P10009. URL: http://cds.cern.ch/record/1704291.
- [123] The CMS Collaboration. « Evidence for the 125 GeV Higgs boson decaying to a pair of τ leptons ». *Journal of High Energy Physics* **05** (20 jan. 2014). DOI: 10.1007/JHEP05(2014)104. arXiv: 1401.5041v2 [hep-ex].
- [124] The CMS Collaboration. « Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC ». *Physics Letters* **B716**.1 (2012), p. 30-61. DOI: https://doi.org/10.1016/j.physletb.2012.08.021. URL: http://www.sciencedirect.com/science/article/pii/S0370269312008581.
- [125] The CMS Collaboration. « Observation of a new boson with mass near 125 GeV in pp collisions at $\sqrt{s}=7$ and 8 TeV ». *Journal of High Energy Physics* **06** (juin 2013). DOI: 10.1007/jhep06(2013)081.
- [126] The CMS Collaboration. « Search for a Higgs boson decaying into a *b*-quark pair and produced in association with *b* quarks in proton-proton collisions at 7 TeV ». *Physics Letters* **B722** (2013), p. 207-232. DOI: 10.1016/j.physletb.2013.04.017. arXiv: 1302.2892 [hep-ex].
- [127] The CMS Collaboration. « Search for neutral Higgs bosons decaying to tau pairs in pp collisions at $\sqrt{s} = 7 \,\text{TeV}$ ». Physics Letters B713 (2012), p. 68-90. DOI: 10.1016/j.physletb. 2012.05.028. arXiv: 1202.4083 [hep-ex].
- [128] The CMS Collaboration. « The performance of the CMS muon detector in proton-proton collisions at $\sqrt{s} = 7 \,\text{TeV}$ at the LHC ». *Journal of Instrumentation* 8 (juin 2013). DOI: 10.1088/1748-0221/8/11/P11002. URL: https://cds.cern.ch/record/1558674.
- [129] The CMS Collaboration. Performance of the CMS electromagnetic calorimeter during the LHC Run II and its role in precision physics measurements. Rapp. tech. Geneva: CERN, août 2018. DOI: 10.22323/1.321.0084. URL: https://cds.cern.ch/record/2637093.
- [130] The CMS Collaboration. CMS TriDAS project: Technical Design Report. T. 2. Technical Design Report CMS. Geneva: CERN, 2002. URL: http://cds.cern.ch/record/578006.
- [131] The CMS Collaboration. « CMS ECAL first results with 2016 data » (juin 2016). URL: http://cds.cern.ch/record/2194169.
- [132] The CMS Collaboration. « CMS ECAL Response to Laser Light » (mar. 2019). URL: https://cds.cern.ch/record/2668200.
- [133] The CMS Collaboration. CMS Luminosity Public Results. URL: https://twiki.cern.ch/twiki/bin/view/CMSPublic/LumiPublicResults.
- [134] The CMS Collaboration. CMS luminosity measurement for the 2017 data-taking period at $\sqrt{s} = 13$ TeV. Rapp. tech. CMS-PAS-LUM-17-004. Geneva: CERN, 2018. URL: http://cds.cern.ch/record/2621960.
- [135] The CMS Collaboration. CMS luminosity measurement for the 2018 data-taking period at $\sqrt{s} = 13$ TeV. Rapp. tech. CMS-PAS-LUM-18-002. Geneva: CERN, 2019. URL: http://cds.cern.ch/record/2676164.
- [136] The CMS Collaboration. CMS Luminosity Measurements for the 2016 Data Taking Period. Rapp. tech. CMS-PAS-LUM-17-001. Geneva: CERN, 2017. URL: http://cds.cern.ch/record/2257069.
- [137] The CMS Collaboration. « First results from the CMS SiPM-based hadronic endcap calorimeter ». Geneva, août 2018. DOI: 10.1088/1742-6596/1162/1/012009. URL: https://cds.cern.ch/record/2636475.

- [138] The CMS Collaboration. CMS: letter of intent by the CMS Collaboration for a general purpose detector at LHC. Rapp. tech. CERN-LHCC-92-003. LHCC-I-1. Geneva: CERN, 1992. URL: https://cds.cern.ch/record/290808.
- [139] The CMS Collaboration. « Determination of jet energy calibration and transverse momentum resolution in CMS ». *Journal of Instrumentation* **6.**11 (nov. 2011). DOI: 10.1088/1748-0221/6/11/p11002. URL: http://dx.doi.org/10.1088/1748-0221/6/11/P11002.
- [140] The CMS Collaboration. CMS electromagnetic calorimeter calibration and timing performance during LHC Run I and future prospects. Rapp. tech. Geneva: CERN, nov. 2014. URL: https://cds.cern.ch/record/1975982.
- [141] The CMS Collaboration. « ECAL 2016 refined calibration and Run2 summary plots » (avr. 2020). URL: https://cds.cern.ch/record/2717925.
- [142] The CMS Collaboration. « Energy calibration and resolution of the CMS electromagnetic calorimeter in pp collisions at $\sqrt{s}=7\,\mathrm{TeV}$ ». Journal of Instrumentation 8 (juin 2013). DOI: 10.1088/1748-0221/8/09/P09009. URL: https://cds.cern.ch/record/1554142.
- [143] The CMS Collaboration. Overview of the CMS electromagnetic calorimeter. Rapp. tech. Geneva: CERN, 1999. DOI: 10.1016/S0920-5632(99)00544-7. URL: https://cds.cern.ch/record/421977.
- [144] The CMS Collaboration. « HCAL Calibration in 2016 » (mai 2017). URL: https://cds.cern.ch/record/2263759.
- [145] The CMS Collaboration. « HCAL Calibration Status in Summer 2017 » (mai 2017). URL: https://cds.cern.ch/record/2281146.
- [146] The CMS Collaboration. « HCAL Energy Reconstruction Performance » (nov. 2016). URL: https://cds.cern.ch/record/2235509.
- [147] The CMS Collaboration. « HCAL Out Of Time Pileup Subtraction and Energy Reconstruction » (mai 2018). URL: https://cds.cern.ch/record/2320408.
- [148] The CMS Collaboration. « The CMS detector magnet ». *IEEE Transactions on Applied Superconductivity* **10**.1 (2000). DOI: 10.1109/77.828255. URL: http://cds.cern.ch/record/438917.
- [149] The CMS Collaboration. « HF and HEP17 : phase1 upgrade performances » (oct. 2017). URL : https://cds.cern.ch/record/2288359.
- [150] The CMS Collaboration. « Identification of b-quark jets with the CMS experiment ». *Journal of Instrumentation* **8.04** (avr. 2013). DOI: 10.1088/1748-0221/8/04/p04013. URL: http://dx.doi.org/10.1088/1748-0221/8/04/P04013.
- [151] The CMS Collaboration. « Jet energy scale and resolution performance with 13 TeV data collected by CMS in 2016 » (juin 2018). URL: http://cds.cern.ch/record/2622157.
- [152] The CMS Collaboration. « Jet energy scale and resolution performance with 13 TeV data collected by CMS in 2016-2018 » (avr. 2020). URL: https://cds.cern.ch/record/2715872.
- [153] The CMS Collaboration. « Search for neutral MSSM Higgs bosons decaying to a pair of tau leptons in *pp* collisions ». *Journal of High Energy Physics* **10** (oct. 2014). DOI: 10.1007/jhep10(2014)160. URL: http://dx.doi.org/10.1007/JHEP10(2014)160.
- [154] The CMS Collaboration. « Jet energy scale and resolution in the CMS experiment in *pp* collisions at 8 TeV ». *Journal of Instrumentation* **12**.02 (fév. 2017). DOI: 10.1088/1748-0221/12/02/p02014. URL: https://doi.org/10.1088%2F1748-0221%2F12%2F02%2Fp02014.
- [155] The CMS Collaboration. « Event generator tunes obtained from underlying event and multiparton scattering measurements ». *European Physical Journal* C76.3 (2016). DOI: 10.1140/epjc/s10052-016-3988-x. arXiv: 1512.00815 [hep-ex].
- [156] The CMS Collaboration. « Performance of photon reconstruction and identification with the CMS detector in proton-proton collisions at $\sqrt{s}=8\,\text{TeV}$ ». *Journal of Instrumentation* **10** (fév. 2015). DOI: 10.1088/1748-0221/10/08/P08010. URL: https://cds.cern.ch/record/1988093.

- [157] The CMS Collaboration. « Reconstruction and identification of tau lepton decays to hadrons and tau neutrino at CMS ». *Journal of Instrumentation* **11**.1 (2016). DOI: 10.1088/1748-0221/11/01/P01019. arXiv: 1510.07488 [physics.ins-det].
- [158] The CMS Collaboration. «Search for neutral MSSM Higgs bosons decaying into a pair of bottom quarks ». *Journal of High Energy Physics* **11** (2015). DOI: 10.1007/JHEP11(2015)071. arXiv: 1506.08329 [hep-ex].
- [159] The CMS Collaboration. « Search for neutral MSSM Higgs bosons decaying to $\mu^+\mu^-$ in pp collisions at $\sqrt{s}=7$ and 8 TeV ». *Physics Letters* **B752** (2016), p. 221-246. DOI: 10.1016/j. physletb.2015.11.042. arXiv:1508.01437 [hep-ex].
- [160] The CMS Collaboration. « The CMS trigger system ». *Journal of Instrumentation* **12** (sept. 2016). DOI: 10.1088/1748-0221/12/01/P01020. URL: https://cds.cern.ch/record/2212926.
- [161] The CMS Collaboration. « CMS set of posters (En & Fr) updated 2019 » (mar. 2020). URL: https://cds.cern.ch/record/2712624.
- [162] The CMS Collaboration. « Noise in Phase 1 HF detector in 2017 » (mai 2017). URL: https://cds.cern.ch/record/2281147.
- [163] The CMS Collaboration. *Performance of quark/gluon discrimination in* 8 TeV *pp data*. Rapp. tech. CMS-PAS-JME-13-002. Geneva: CERN, 2013. URL: http://cds.cern.ch/record/1599732.
- [164] The CMS Collaboration. « Results related to the Phase1 HE upgrade » (mai 2018). URL: https://cds.cern.ch/record/2320857.
- [165] The CMS Collaboration. « « ZOOOM »: Drawings of the CMS detector with SketchUp » (juin 2012). URL: https://cds.cern.ch/record/2629326.
- [166] The CMS Collaboration. « An embedding technique to determine $\tau\tau$ backgrounds in proton-proton collision data ». *Journal of Instrumentation* **14**.06 (juin 2019). DOI: 10.1088/1748-0221/14/06/p06032.
- [167] The CMS Collaboration. « Particle-flow reconstruction and global event description with the CMS detector ». *Journal of Instrumentation* 12.10 (juin 2017). DOI: 10.1088/1748-0221/12/10/P10003. arXiv:1706.04965v2 [physics.ins-det]. URL: http://stacks.iop.org/1748-0221/12/i=10/a=P10003.
- [168] The CMS Collaboration. « Performance of the CMS muon detector and muon reconstruction with proton-proton collisions at $\sqrt{s}=13\,\text{TeV}$ ». Journal of Instrumentation 13 (avr. 2018). DOI: 10.1088/1748-0221/13/06/P06015. URL: https://cds.cern.ch/record/2313130.
- [169] The CMS Collaboration. « Search for additional neutral MSSM Higgs bosons in the di-tau final state in pp collisions at $\sqrt{s} = 13 \,\text{TeV}$ ». *Journal of High Energy Physics* **09**.007 (sept. 2018). DOI: 10.1007/JHEP09(2018)007.
- [170] The CMS Collaboration. « Identification of heavy-flavour jets with the CMS detector in *pp* collisions at 13 TeV ». *Journal of Instrumentation* **13**.05 (mai 2018). DOI: 10.1088/1748-0221/13/05/p05011. URL: http://dx.doi.org/10.1088/1748-0221/13/05/P05011.
- [171] The CMS Collaboration. « Extraction and validation of a new set of CMS PYTHIA 8 tunes from underlying-event measurements ». European Physical Journal C80 (mar. 2019). DOI: 10.1140/epjc/s10052-019-7499-4. URL: https://cds.cern.ch/record/2669320.
- [172] The CMS Collaboration. « Measurement of differential cross sections for inclusive isolated-photon and photon+jets production in proton-proton collisions at $\sqrt{s} = 13 \,\text{TeV}$ ». European Physical Journal C79.20 (juil. 2018). DOI: 10.1140/epjc/s10052-018-6482-9. URL: http://cds.cern.ch/record/2628267.
- [173] The CMS Collaboration. « Precision measurement of the structure of the CMS inner tracking system using nuclear interactions ». *Journal of Instrumentation* **13** (juil. 2018). DOI: 10.1088/1748-0221/13/10/P10034. URL: https://cds.cern.ch/record/2629890.

- [174] The CMS Collaboration. *The CMS electromagnetic calorimeter project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : https://cds.cern.ch/record/349375.
- [175] The CMS Collaboration. « The CMS experiment at the CERN LHC. The Compact Muon Solenoid experiment ». *Journal of Instrumentation* 3.S08004 (2008). DOI: 10.1088/1748-0221/3/08/S08004. URL: http://cds.cern.ch/record/1129810.
- [176] The CMS Collaboration. *The CMS hadron calorimeter project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : https://cds.cern.ch/record/357153.
- [177] The CMS Collaboration. *The CMS magnet project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : http://cds.cern.ch/record/331056.
- [178] The CMS Collaboration. *The CMS muon project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : https://cds.cern.ch/record/343814.
- [179] The CMS Collaboration. *The CMS tracker system project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : https://cds.cern.ch/record/368412.
- [180] The DØ Collaboration. «Observation of the top quark ». Physical Review Letters 74.14 (avr. 1995), p. 2632-2637. DOI: 10.1103/physrevlett.74.2632. URL: http://dx.doi.org/10.1103/PhysRevLett.74.2632.
- [181] The DØ Collaboration. « Search for Higgs bosons decaying to $\tau\tau$ pairs in $p\bar{p}$ collisions at $\sqrt{s}=1,96\,\text{TeV}$ ». Physics Letters B707 (2012), p. 323-329. DOI: 10.1016/j.physletb.2011.12. 050. arXiv: 1106.4555 [hep-ex].
- [182] The DØ Collaboration. « Measurement of the B^0_s lifetime in the exclusive decay channel $B^0_s \to J/\Psi \phi$ ». *Physical Review Letters* **94** (2005).
- [183] The LHCb Collaboration. « The LHCb Detector at the LHC ». Journal of Instrumentation 3.S08005 (2008). DOI: 10.1088/1748-0221/3/08/S08005. URL: http://cds.cern.ch/record/1129809.
- [184] The LHCf Collaboration. «The LHCf detector at the CERN Large Hadron Collider ». Journal of Instrumentation 3.S08006 (2008). DOI: 10.1088/1748-0221/3/08/S08006. URL: http://cds.cern.ch/record/1129808.
- [185] The MoEDAL Collaboration. *Technical Design Report of the MoEDAL Experiment*. Rapp. tech. CERN-LHCC-2009-006. MoEDAL-TDR-001. Juin 2009. URL: https://cds.cern.ch/record/1181486.
- [186] The SNO Collaboration. « Direct Evidence for Neutrino Flavor Transformation from Neutral-Current Interactions in the Sudbury Neutrino Observatory ». *Physical Review Letters* **89** (1 juin 2002). DOI: 10.1103/PhysRevLett.89.011301. URL: https://link.aps.org/doi/10.1103/PhysRevLett.89.011301.
- [187] The Super-Kamiokande Collaboration. « Evidence for oscillation of atmospheric neutrinos ». *Physical Review Letters* **81** (8 août 1998), p. 1562-1567. DOI: 10.1103/PhysRevLett.81.1562. URL: https://link.aps.org/doi/10.1103/PhysRevLett.81.1562.
- [188] The TOTEM Collaboration. « The TOTEM Experiment at the CERN Large Hadron Collider ». Journal of Instrumentation 3.S08007 (2008). DOI: 10.1088/1748-0221/3/08/S08007. URL: http://cds.cern.ch/record/1129807.
- [189] S. Weinberg. « A model of leptons ». Physical Review Letters 19 (21 nov. 1967), p. 1264-1266. doi: 10.1103/PhysRevLett.19.1264. URL: https://link.aps.org/doi/10.1103/PhysRevLett.19.1264.
- [190] J.-C. Winter, F. Krauss & G. Soff. « A modified cluster-hadronisation model ». *European Physical Journal* C36.3 (août 2004), p. 381-395. DOI: 10.1140/epjc/s2004-01960-8. URL: http://dx.doi.org/10.1140/epjc/s2004-01960-8.
- [191] C. S. Wu & coll. « Experimental Test of Parity Conservation in Beta Decay ». *Physical Review* 105 (4 fév. 1957), p. 1413-1415. DOI: 10.1103/PhysRev.105.1413. URL: https://link.aps.org/doi/10.1103/PhysRev.105.1413.