

# Bibliographie de thèse

## Liste des entrées dans le fichier .bib

Lucas TORTEROTOT  
26 novembre 2020

### 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](https://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](https://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] S. Abdullin & coll. « The Fast Simulation of the CMS Detector at LHC ». *Journal of Physics : Conference Series* **331**.3 (déc. 2011). DOI : [10.1088/1742-6596/331/3/032049](https://doi.org/10.1088/1742-6596/331/3/032049).
- [5] 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](https://doi.org/10.1051/0004-6361/201321529).
- [6] S. Agostinelli & coll. « GEANT4 – A simulation toolkit ». *Nuclear Instruments and Methods in Physics Research A* **506**.3 (2003), p. 250-303. DOI : [10.1016/S0168-9002\(03\)01368-8](https://doi.org/10.1016/S0168-9002(03)01368-8). URL : <http://www.sciencedirect.com/science/article/pii/S0168900203013688>.
- [7] 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](https://doi.org/10.1007/jhep06(2010)043). arXiv : [1002.2581](https://arxiv.org/abs/1002.2581) [hep-ph].
- [8] J. Allison & coll. « GEANT4 developments and applications ». *IEEE Transactions on Nuclear Science* **53**.1 (fév. 2006), p. 270-278. DOI : [10.1109/tns.2006.869826](https://doi.org/10.1109/tns.2006.869826).
- [9] J. Allison & coll. « Recent developments in GEANT4 ». *Nuclear Instruments and Methods in Physics Research A* **835** (2016), p. 186-225. DOI : [10.1016/j.nima.2016.06.125](https://doi.org/10.1016/j.nima.2016.06.125). URL : <http://www.sciencedirect.com/science/article/pii/S0168900216306957>.
- [10] J. Alwall & coll. « MADGRAPH 5 : Going Beyond ». *Journal of High Energy Physics* **06** (2011). DOI : [10.1007/jhep06\(2011\)128](https://doi.org/10.1007/jhep06(2011)128). arXiv : [1106.0522](https://arxiv.org/abs/1106.0522) [hep-ph].
- [11] H. L. Anderson & coll. « Total Cross Sections of Negative Pions in Hydrogen ». *Physical Review* **85**.5 (mar. 1952), p. 934-935. DOI : [10.1103/PhysRev.85.934.2](https://doi.org/10.1103/PhysRev.85.934.2).
- [12] H. L. Anderson & coll. « Total Cross Sections of Positive Pions in Hydrogen ». *Physical Review* **85**.5 (mar. 1952), p. 936. DOI : [10.1103/PhysRev.85.936](https://doi.org/10.1103/PhysRev.85.936).
- [13] B. Andersson & coll. « Parton fragmentation and string dynamics » (avr. 1983). URL : <http://cds.cern.ch/record/143980>.
- [14] 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).
- [15] P. Arce & coll. « The network of photodetectors and diode lasers of the CMS Link alignment system ». *Nuclear Instruments and Methods in Physics Research A* **896** (2018), p. 1-23. DOI : [10.1016/j.nima.2018.04.004](https://doi.org/10.1016/j.nima.2018.04.004). URL : <http://cds.cern.ch/record/2637152>.
- [16] C. Armand & coll. *JRJC 2019. Book of Proceedings*. Août 2020. URL : <https://hal.archives-ouvertes.fr/hal-02971995>.

- [17] G. ARNISON & coll. « Experimental observation of isolated large transverse energy electrons with associated missing energy at  $\sqrt{s} = 540$  GeV ». *Physics Letters* **B122.1** (1983), p. 103-116. DOI : [10.1016/0370-2693\(83\)91177-2](https://doi.org/10.1016/0370-2693(83)91177-2). URL : <http://www.sciencedirect.com/science/article/pii/0370269383911772>.
- [18] 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 : [10.1016/0370-2693\(83\)90188-0](https://doi.org/10.1016/0370-2693(83)90188-0). URL : <http://www.sciencedirect.com/science/article/pii/0370269383901880>.
- [19] G. ARNISON & coll. « Further evidence for charged intermediate vector bosons at the SPS collider ». *Physics Letters* **B129.3** (1983), p. 273-282. DOI : [10.1016/0370-2693\(83\)90860-2](https://doi.org/10.1016/0370-2693(83)90860-2). URL : <http://www.sciencedirect.com/science/article/pii/0370269383908602>.
- [20] P. BAGNAIA & coll. « Evidence for  $Z^0 \rightarrow e^+e^-$  at the CERN  $pp$  collider ». *Physics Letters* **B129.1** (1983), p. 130-140. DOI : [10.1016/0370-2693\(83\)90744-X](https://doi.org/10.1016/0370-2693(83)90744-X). URL : <http://www.sciencedirect.com/science/article/pii/037026938390744X>.
- [21] E. BAGNASCHI & coll. « MSSM Higgs boson searches at the LHC : benchmark scenarios for Run 2 and beyond ». *The European Physical Journal* **C79.7** (juil. 2019). DOI : [10.1140/epjc/s10052-019-7114-8](https://doi.org/10.1140/epjc/s10052-019-7114-8).
- [22] R. D. BALL & coll. « Parton distributions for the LHC Run II ». *Journal of High Energy Physics* **4** (avr. 2015). DOI : [10.1007/jhep04\(2015\)040](https://doi.org/10.1007/jhep04(2015)040).
- [23] 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 : [10.1016/0370-2693\(83\)91605-2](https://doi.org/10.1016/0370-2693(83)91605-2). URL : <http://www.sciencedirect.com/science/article/pii/0370269383916052>.
- [24] V. E. BARNES & coll. « Observation of a Hyperon with Strangeness Minus Three ». *Physical Review Letters* **12.8** (fév. 1964), p. 204-206. DOI : [10.1103/PhysRevLett.12.204](https://doi.org/10.1103/PhysRevLett.12.204).
- [25] 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>.
- [26] P. BÄRTSCHI & coll. « Reconstruction of  $\tau$  lepton pair invariant mass using an artificial neural network ». *Nuclear Instruments and Methods in Physics Research* **A929** (2019), p. 29-33. DOI : [10.1016/j.nima.2019.03.029](https://doi.org/10.1016/j.nima.2019.03.029). URL : <http://www.sciencedirect.com/science/article/pii/S0168900219303377>.
- [27] G. BELLINI, I. BIGI & P. DORNAN. « Lifetimes of charm and beauty hadrons ». *Physics Reports* **289.1** (1997), p. 1-155. DOI : [10.1016/S0370-1573\(97\)00005-7](https://doi.org/10.1016/S0370-1573(97)00005-7). URL : <http://www.sciencedirect.com/science/article/pii/S0370157397000057>.
- [28] 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](https://doi.org/10.1140/epjc/s10052-016-4018-8).
- [29] 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](https://doi.org/10.5170/CERN-2004-003-V-3). URL : <https://cds.cern.ch/record/823808>.
- [30] 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 : <https://cds.cern.ch/record/1482660>.
- [31] C. BERNET. « Reconstruction du flux de particules et mise en évidence de la désintégration du boson de Higgs en paire de  $\tau$  avec CMS ». Thèse d'HDR. Université Claude Bernard Lyon 1, avr. 2017. URL : <https://drive.google.com/open?id=0B3nnTYQibadjVkVvUi03cGRiYlkl>.
- [32] D. BERTOLINI & coll. « Pileup per particle identification ». *Journal of High Energy Physics* **10** (oct. 2014). DOI : [10.1007/jhep10\(2014\)059](https://doi.org/10.1007/jhep10(2014)059).
- [33] H. A. BETHE. « Molière's Theory of Multiple Scattering ». *Physical Review* **89** (6 mar. 1953). DOI : [10.1103/PhysRev.89.1256](https://doi.org/10.1103/PhysRev.89.1256).

- [34] L. BIANCHINI & coll. « Reconstruction of the Higgs mass in  $H \rightarrow \tau\tau$  Events by Dynamical Likelihood techniques ». *Journal of Physics : Conference Series* **513.2** (juin 2014). DOI : [10.1088/1742-6596/513/2/022035](https://doi.org/10.1088/1742-6596/513/2/022035).
- [35] P. BOLZONI & coll. « Vector boson fusion at next-to-next-to-leading order in QCD : Standard model Higgs boson and beyond ». *Physical Review D* **85** (3 fév. 2012). DOI : [10.1103/PhysRevD.85.035002](https://doi.org/10.1103/PhysRevD.85.035002).
- [36] 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>.
- [37] 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](https://doi.org/10.5170/CERN-2004-003-V-2). URL : <https://cds.cern.ch/record/815187>.
- [38] 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](https://doi.org/10.5170/CERN-2004-003-V-1). URL : <https://cds.cern.ch/record/782076>.
- [39] A. BUCKLEY & coll. « General-purpose event generators for LHC physics ». *Physics Reports* **504** (jan. 2011). DOI : [10.1016/j.physrep.2011.03.005](https://doi.org/10.1016/j.physrep.2011.03.005). URL : <http://cds.cern.ch/record/1322340>.
- [40] B. BULLOCK, K. HAGIWARA & A. MARTIN. « Tau polarization and its correlations as a probe of new physics ». *Nuclear Physics B* **395.3** (1993), p. 499-533. DOI : [10.1016/0550-3213\(93\)90045-Q](https://doi.org/10.1016/0550-3213(93)90045-Q). URL : <http://www.sciencedirect.com/science/article/pii/055032139390045Q>.
- [41] N. CABIBBO. « Unitary Symmetry and Leptonic Decays ». *Physical Review Letters* **10** (12 juin 1963), p. 531-533. DOI : [10.1103/PhysRevLett.10.531](https://doi.org/10.1103/PhysRevLett.10.531).
- [42] N. CABIBBO. « Unitary Symmetry and Nonleptonic Decays ». *Physical Review Letters* **12** (2 jan. 1964), p. 62-63. DOI : [10.1103/PhysRevLett.12.62](https://doi.org/10.1103/PhysRevLett.12.62).
- [43] M. CACCIARI & G. P. SALAM. « Dispelling the  $N^3$  myth for the  $k_T$  jet-finder ». *Physics Letters B* **641.1** (sept. 2006), p. 57-61. DOI : [10.1016/j.physletb.2006.08.037](https://doi.org/10.1016/j.physletb.2006.08.037).
- [44] M. CACCIARI & G. P. SALAM. « Pileup subtraction using jet areas ». *Physics Letters B* **659** (jan. 2008), p. 119-126. DOI : [10.1016/j.physletb.2007.09.077](https://doi.org/10.1016/j.physletb.2007.09.077).
- [45] M. CACCIARI, G. P. SALAM & G. SOYEZ. « FASTJET user manual ». *European Physical Journal C* **72** (nov. 2012). DOI : [10.1140/epjc/s10052-012-1896-2](https://doi.org/10.1140/epjc/s10052-012-1896-2). arXiv : [1111.6097 \[hep-ph\]](https://arxiv.org/abs/1111.6097).
- [46] 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](https://doi.org/10.1088/1126-6708/2008/04/063). arXiv : [0802.1189 \[hep-ph\]](https://arxiv.org/abs/0802.1189).
- [47] M. CARENA & coll. « MSSM Higgs boson searches at the LHC : benchmark scenarios after the discovery of a Higgs-like particle ». *European Physical Journal C* **73.9** (sept. 2013). DOI : [10.1140/epjc/s10052-013-2552-1](https://doi.org/10.1140/epjc/s10052-013-2552-1).
- [48] S. CATANI & coll. « New clustering algorithm for multijet cross sections in  $e^+e^-$  annihilation ». *Physics Letters B* **269.3** (1991), p. 432-438. DOI : [10.1016/0370-2693\(91\)90196-W](https://doi.org/10.1016/0370-2693(91)90196-W).
- [49] CERN. *MapCERN*. URL : <https://maps.web.cern.ch/>.
- [50] CERN. *The first touchscreen used at CERN*. URL : <https://www.youtube.com/watch?v=tQe5dlzScwU>.
- [51] CERN. *The Higgs Discovery Explained – Ep. 1/3*. URL : <https://www.youtube.com/watch?v=so2nCu2Jkbc>.
- [52] CERN. *The Higgs Discovery Explained – Ep. 2/3*. URL : <https://www.youtube.com/watch?v=pW4LTunlXS4>.
- [53] CERN. *The Higgs Discovery Explained – Ep. 3/3*. URL : <https://www.youtube.com/watch?v=8-WFBGCvv-w>.

- [54] CERN. *The World Wide Web Project*. 1989. URL : <http://info.cern.ch/hypertext/WWW/TheProject.html>.
- [55] T. CHEN & C. GUESTRIN. « XGBOOST : A Scalable Tree Boosting System ». *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (août 2016). DOI : [10.1145/2939672.2939785](https://doi.org/10.1145/2939672.2939785).
- [56] F. CHOLLET & coll. KERAS. <https://keras.io>. 2015.
- [57] N. D. CHRISTENSEN, T. HAN & S. SU. « MSSM Higgs Bosons at The LHC ». *Physical Review D* **85** (2012). DOI : [10.1103/PhysRevD.85.115018](https://doi.org/10.1103/PhysRevD.85.115018). arXiv : [1203.3207 \[hep-ph\]](https://arxiv.org/abs/1203.3207).
- [58] J. H. CHRISTENSON & coll. « Evidence for the  $2\pi$  Decay of the  $K_2^0$  Meson ». *Physical Review Letters* **13** (4 juil. 1964), p. 138-140. DOI : [10.1103/PhysRevLett.13.138](https://doi.org/10.1103/PhysRevLett.13.138).
- [59] D. CLOWE & coll. « A Direct Empirical Proof of the Existence of Dark Matter ». *Astrophysical Journal* **648.2** (août 2006). DOI : [10.1086/508162](https://doi.org/10.1086/508162).
- [60] *Dask : Scalable analytics in Python*. URL : <https://dask.org/>.
- [61] A. DAVIDSON & K. C. WALL. « Family mass hierarchy from universal seesaw mechanism ». *Physical Review Letters* **60** (18 mai 1988), p. 1813-1816. DOI : [10.1103/PhysRevLett.60.1813](https://doi.org/10.1103/PhysRevLett.60.1813).
- [62] 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](https://doi.org/10.1103/physrevlett.77.16).
- [63] DELPHI, OPAL, ALEPH, LEP Working Group for Higgs Boson Searches, L3. « Search for neutral MSSM Higgs bosons at LEP ». *European Physical Journal C* **47** (2006), p. 547-587. DOI : [10.1140/epjc/s2006-02569-7](https://doi.org/10.1140/epjc/s2006-02569-7). arXiv : [hep-ex/0602042 \[hep-ex\]](https://arxiv.org/abs/hep-ex/0602042).
- [64] 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](https://doi.org/10.1140/epjc/s10052-013-2650-0). arXiv : [1307.5205v1 \[hep-ph\]](https://arxiv.org/abs/1307.5205v1).
- [65] Y. L. DOKSHITZER & coll. « Better Jet Clustering Algorithms » (1997). arXiv : [hep-ph/9707323 \[hep-ph\]](https://arxiv.org/abs/hep-ph/9707323).
- [66] A. DOMINGUEZ & coll. *CMS Technical Design Report for the Pixel Detector Upgrade*. Rapp. tech. Sept. 2012. URL : <https://cds.cern.ch/record/1481838>.
- [67] 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>.
- [68] S. DÜRR & coll. « Ab Initio Determination of Light Hadron Masses ». *Science* **322.5905** (nov. 2008), p. 1224-1227. DOI : [10.1126/science.1163233](https://doi.org/10.1126/science.1163233).
- [69] 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](https://doi.org/10.1103/PhysRevLett.13.321).
- [70] 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](https://doi.org/10.1007/jhep02(2014)057).
- [71] P. FAYET. « Spontaneously broken supersymmetric theories of weak, electromagnetic and strong interactions ». *Physics Letters B* **69.4** (1977), p. 489-494. DOI : [10.1016/0370-2693\(77\)90852-8](https://doi.org/10.1016/0370-2693(77)90852-8). URL : <http://www.sciencedirect.com/science/article/pii/0370269377908528>.
- [72] P. FAYET. « Supergauge invariant extension of the Higgs mechanism and a model for the electron and its neutrino ». *Nuclear Physics B* **90** (1975), p. 104-124. DOI : [10.1016/0550-3213\(75\)90636-7](https://doi.org/10.1016/0550-3213(75)90636-7). URL : <http://www.sciencedirect.com/science/article/pii/0550321375906367>.
- [73] R. P. FEYNMAN. « Space-Time Approach to Quantum Electrodynamics ». *Physical Review* **76.6** (sept. 1949), p. 769-789. DOI : [10.1103/PhysRev.76.769](https://doi.org/10.1103/PhysRev.76.769).
- [74] 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](https://doi.org/10.1088/1126-6708/2003/08/007).



- [75] 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](https://doi.org/10.1016/j.physrep.2018.03.002).
- [76] M. GELL-MANN, P. RAMOND & R. SLANSKY. « Complex Spinors and Unified Theories » (1979). arXiv : [1306.4669 \[hep-th\]](https://arxiv.org/abs/1306.4669). URL : <http://cds.cern.ch/record/133618>.
- [77] A. GIAMMANCO. « The Fast Simulation of the CMS Experiment ». *Journal of Physics : Conference Series* **513.2** (juin 2014). DOI : [10.1088/1742-6596/513/2/022012](https://doi.org/10.1088/1742-6596/513/2/022012).
- [78] S. L. GLASHOW. « Partial-symmetries of weak interactions ». *Nuclear Physics* **22.4** (1961), p. 579-588. DOI : [10.1016/0029-5582\(61\)90469-2](https://doi.org/10.1016/0029-5582(61)90469-2).
- [79] S. L. GLASHOW. « The renormalizability of vector meson interactions ». *Nuclear Physics* **10** (1959), p. 107-117. DOI : [10.1016/0029-5582\(59\)90196-8](https://doi.org/10.1016/0029-5582(59)90196-8). URL : <http://www.sciencedirect.com/science/article/pii/0029558259901968>.
- [80] Y. A. GOL'FAND & E. P. LIKHTMAN. « Extension of the algebra of Poincare group generators and violation of  $P$  invariance ». *Journal of Experimental and Theoretical Physics Letters* **13.8** (1971), p. 323-325. URL : <http://cds.cern.ch/record/433516>.
- [81] V. GORI. « The CMS High Level Trigger ». *International Journal of Modern Physics : Conference Series* **31** (mar. 2014). DOI : [10.1142/S201019451460297X](https://doi.org/10.1142/S201019451460297X). URL : <https://cds.cern.ch/record/1666961>.
- [82] A. GOTTMANN. « Global Interpretation of  $\tau\tau$  Events in the Context of the Standard Model and Beyond ». Thèse de doct. Fakultät für Physik des Karlsruher Instituts für Technologie (KIT), juin 2020. URL : <https://publish.etp.kit.edu/record/22014>.
- [83] D. J. GROSS & F. WILCZEK. « Ultraviolet Behavior of Non-Abelian Gauge Theories ». *Physical Review Letters* **30** (26 juin 1973), p. 1343-1346. DOI : [10.1103/PhysRevLett.30.1343](https://doi.org/10.1103/PhysRevLett.30.1343).
- [84] 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](https://doi.org/10.1103/physrevd.94.112002).
- [85] 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>.
- [86] J. F. GUNION & coll. *The Higgs hunter's guide*. T. **80**. Upton, NY : Brookhaven Nat. Lab., 1989. URL : <https://cds.cern.ch/record/425736>.
- [87] 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](https://doi.org/10.1103/PhysRevLett.13.585).
- [88] T. M. HAHN & coll. « Neutrons and Gamma-Rays from the Proton Bombardment of Beryllium ». *Physical Review* **85.5** (mar. 1952), p. 934. DOI : [10.1103/PhysRev.85.934](https://doi.org/10.1103/PhysRev.85.934).
- [89] 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](https://doi.org/10.1016/0550-3213(74)90038-8). URL : <http://cds.cern.ch/record/203096>.
- [90] 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](https://doi.org/10.1016/0370-2693(73)90494-2). URL : <http://cds.cern.ch/record/243640>.
- [91] 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](https://doi.org/10.1016/0370-2693(73)90499-1). URL : <http://www.sciencedirect.com/science/article/pii/0370269373904991>.
- [92] P. W. HIGGS. « Broken symmetries and the masses of gauge bosons ». *Physics Letters* **13.16** (oct. 1964). DOI : [10.1103/physrevlett.13.508](https://doi.org/10.1103/physrevlett.13.508).
- [93] P. W. HIGGS. « Broken symmetries, massless particles and gauge fields ». *Physics Letters* **12.2** (sept. 1964). DOI : [10.1016/0031-9163\(64\)91136-9](https://doi.org/10.1016/0031-9163(64)91136-9). URL : <https://cds.cern.ch/record/641590>.

- [94] P. W. HIGGS. « Spontaneous symmetry breakdown without massless bosons ». *Physical Review* **145** (4 mai 1966), p. 1156-1163. DOI : [10.1103/PhysRev.145.1156](https://doi.org/10.1103/PhysRev.145.1156). URL : <https://link.aps.org/doi/10.1103/PhysRev.145.1156>.
- [95] D. JANG. « Search for MSSM Higgs decaying to tau pairs in  $p\bar{p}$  collision at  $\sqrt{s} = 1,96$  TeV at CDF ». Thèse de doct. Rutgers, The State University of New Jersey, mai 2006. URL : <https://lss.fnal.gov/archive/thesis/2000/fermilab-thesis-2006-11.pdf>.
- [96] T. W. B. KIBBLE. « Symmetry Breaking in Non-Abelian Gauge Theories ». *Physical Review* **155** (5 mar. 1967), p. 1554-1561. DOI : [10.1103/PhysRev.155.1554](https://doi.org/10.1103/PhysRev.155.1554). URL : <https://link.aps.org/doi/10.1103/PhysRev.155.1554>.
- [97] 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](https://doi.org/10.1143/PTP.49.652). eprint : <https://academic.oup.com/ptp/article-pdf/49/2/652/5257692/49-2-652.pdf>.
- [98] M. KOMM. « Fast emulation of track reconstruction in the CMS simulation ». *Journal of Physics : Conference Series* **898** (oct. 2017). DOI : [10.1088/1742-6596/898/4/042034](https://doi.org/10.1088/1742-6596/898/4/042034).
- [99] A. J. LARKOSKI. « An Unorthodox Introduction to QCD » (2017). arXiv : [1709.06195 \[hep-ph\]](https://arxiv.org/abs/1709.06195).
- [100] H. LATTAUD. « Photon et jets avec l'expérience CMS du LHC : de la calibration à la mesure ». Thèse de doct. Université Claude Bernard Lyon 1, sept. 2019. URL : <https://tel.archives-ouvertes.fr/tel-02422226>.
- [101] 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](https://doi.org/10.5170/CERN-2012-002). URL : <https://cds.cern.ch/record/1416519>.
- [102] 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](https://doi.org/10.5170/CERN-2011-002). URL : <https://cds.cern.ch/record/1318996>.
- [103] 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](https://doi.org/10.23731/CYRM-2017-002). URL : <http://cds.cern.ch/record/2227475>.
- [104] 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](https://doi.org/10.5170/CERN-2013-004). URL : <https://cds.cern.ch/record/1559921>.
- [105] Long term LHC schedule. URL : <https://lhccommissioning.web.cern.ch/>.
- [106] 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](https://doi.org/10.1143/PTP.28.870). eprint : <https://academic.oup.com/ptp/article-pdf/28/5/870/5258750/28-5-870.pdf>.
- [107] J. MANS & coll. *CMS Technical Design Report for the Phase 1 Upgrade of the Hadron Calorimeter*. Rapp. tech. Sept. 2012. URL : <https://cds.cern.ch/record/1481837>.
- [108] S. P. MARTIN. « A Supersymmetry primer ». *Advanced Series on Directions in High Energy Physics* (juil. 1998), p. 1-98. DOI : [10.1142/9789812839657\\_0001](https://doi.org/10.1142/9789812839657_0001).
- [109] 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](https://doi.org/10.1142/9789814644150_0004). URL : <http://cds.cern.ch/record/2103251>.
- [110] 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](https://doi.org/10.1088/1742-6596/608/1/012045).
- [111] A. MICHELINI. « OPAL Detector Performance ». *Philosophical Transactions : Physical Sciences and Engineering* **336.1642** (1991), p. 237-246. URL : <http://www.jstor.org/stable/53786>.
- [112] 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](https://doi.org/10.1103/PhysRevLett.44.912).

- [113] R. N. MOHAPATRA & G. SENJANOVIĆ. « Neutrino masses and mixings in gauge models with spontaneous parity violation ». *Physical Review D* **23** (1 jan. 1981), p. 165-180. DOI : [10.1103/PhysRevD.23.165](https://doi.org/10.1103/PhysRevD.23.165).
- [114] Y. NAGASHIMA. *Beyond the Standard Model of Elementary Particle Physics*. Weinheim : Wiley-VCH, juin 2014. URL : <http://cds.cern.ch/record/1620277>.
- [115] Y. NAGASHIMA. « Foundations of the Standard Model ». *Elementary Particle Physics*. 2. Weinheim : Wiley-VCH, 2013.
- [116] Y. NAGASHIMA. « Quantum Field Theory and Particles ». *Elementary Particle Physics*. 1. Weinheim : Wiley-VCH, 2010.
- [117] 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](https://doi.org/10.1103/PhysRev.51.884).
- [118] 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](https://doi.org/10.1103/PhysRev.115.491).
- [119] OPAL, DELPHI, LEP Working Group for Higgs boson searches, ALEPH, L3. « Search for the standard model Higgs boson at LEP ». *Physics Letters B* **565** (2003), p. 61-75. DOI : [10.1016/S0370-2693\(03\)00614-2](https://doi.org/10.1016/S0370-2693(03)00614-2). arXiv : [hep-ex/0306033](https://arxiv.org/abs/hep-ex/0306033) [hep-ex].
- [120] Particle Data Group. « Review of Particle Physics ». *Chinese Physics* **C38** (août 2014). DOI : [10.1088/1674-1137/38/9/090001](https://doi.org/10.1088/1674-1137/38/9/090001).
- [121] Particle Data Group. « Review of Particle Physics ». *Chinese Physics* **C40** (oct. 2016). DOI : [10.1088/1674-1137/40/10/100001](https://doi.org/10.1088/1674-1137/40/10/100001).
- [122] Particle Data Group. « Review of Particle Physics ». *Physical Review D* **98** (août 2018). DOI : [10.1103/PhysRevD.98.030001](https://doi.org/10.1103/PhysRevD.98.030001).
- [123] Particle Data Group. « Review of Particle Physics ». *Progress of Theoretical and Experimental Physics* **8** (août 2020). DOI : [10.1093/ptep/ptaa104](https://doi.org/10.1093/ptep/ptaa104).
- [124] H. D. POLITZER. « Reliable Perturbative Results for Strong Interactions? » *Physical Review Letters* **30** (26 juin 1973), p. 1346-1349. DOI : [10.1103/PhysRevLett.30.1346](https://doi.org/10.1103/PhysRevLett.30.1346).
- [125] S. RAYCHAUDHURI & D. P. ROY. « Charged Higgs boson search at the Fermilab Tevatron upgrade using  $\tau$  polarization ». *Physical Review D* **52.3** (3 août 1995), p. 1556-1564. DOI : [10.1103/PhysRevD.52.1556](https://doi.org/10.1103/PhysRevD.52.1556).
- [126] G. RIDOLFI, G. ROSS & F. ZWIRNER. « Supersymmetry ». *Large Hadron Collider Workshop Proceedings. II*. CERN. Geneva : CERN, oct. 1990, p. 606-683.
- [127] 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](https://doi.org/10.1088/0954-3899/42/10/103103).
- [128] 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>.
- [129] A. SALAM & J. WARD. « Weak and electromagnetic interactions ». *Nuovo Cim* **11** (fév. 1959), p. 568-577. DOI : [10.1007/BF02726525](https://doi.org/10.1007/BF02726525).
- [130] G. P. SALAM. *Elements of QCD for hadron colliders*. 2010. arXiv : [1011.5131](https://arxiv.org/abs/1011.5131) [hep-ph]. URL : <https://arxiv.org/pdf/1011.5131.pdf>.
- [131] G. P. SALAM. « Towards jetography ». *European Physical Journal* **C67.3-4** (mai 2010), p. 637-686. DOI : [10.1140/epjc/s10052-010-1314-6](https://doi.org/10.1140/epjc/s10052-010-1314-6).
- [132] 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](https://doi.org/10.1088/1126-6708/2007/05/086).
- [133] W. SARLE. « Neural Networks and Statistical Models ». 1994. URL : [https://people.orie.cornell.edu/davidr/or474/nn\\_sas.pdf](https://people.orie.cornell.edu/davidr/or474/nn_sas.pdf).

- [134] A. SCHÄLICHE & coll. « An event generator for particle production in high-energy collisions ». *Progress in Particle and Nuclear Physics* **53.1** (2004), p. 329-338. DOI : [10.1016/j.pnpnp.2004.02.031](https://doi.org/10.1016/j.pnpnp.2004.02.031). URL : <http://www.sciencedirect.com/science/article/pii/S014664100400047X>.
- [135] J. SCHECHTER & J. W. F. VALLE. « Neutrino masses in  $SU(2) \times U(1)$  theories ». *Physical Review D* **D22** (9 nov. 1980), p. 2227-2235. DOI : [10.1103/PhysRevD.22.2227](https://doi.org/10.1103/PhysRevD.22.2227).
- [136] S. SEKMEN. *Recent Developments in CMS Fast Simulation*. 2017. arXiv : [1701.03850](https://arxiv.org/abs/1701.03850).
- [137] Site internet du CERN. URL : <https://home.cern/>.
- [138] 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](https://doi.org/10.1088/1126-6708/2006/05/026).
- [139] 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](https://doi.org/10.1016/j.cpc.2015.01.024). arXiv : [1410.3012](https://arxiv.org/abs/1410.3012) [[hep-ph](#)].
- [140] 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](https://doi.org/10.1016/j.nima.2005.11.207). URL : <http://cds.cern.ch/record/884424>.
- [141] 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>.
- [142] A. TAPPER & D. ACOSTA. *CMS Technical Design Report for the Level-1 Trigger Upgrade*. Rapp. tech. Juin 2013. URL : <https://cds.cern.ch/record/1556311>.
- [143] 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](https://doi.org/10.1088/1748-0221/3/08/S08002). URL : <http://cds.cern.ch/record/1129812>.
- [144] The ATLAS Collaboration. « Search for additional heavy neutral Higgs and gauge bosons in the ditau final state produced in  $36\text{ fb}^{-1}$  of  $pp$  collisions at  $\sqrt{s} = 13\text{ TeV}$  with the ATLAS detector ». *Journal of High Energy Physics* **1** (jan. 2018). DOI : [10.1007/jhep01\(2018\)055](https://doi.org/10.1007/jhep01(2018)055).
- [145] 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 B* **B716.1** (2012), p. 1-29. DOI : [10.1016/j.physletb.2012.08.020](https://doi.org/10.1016/j.physletb.2012.08.020). URL : <http://www.sciencedirect.com/science/article/pii/S037026931200857X>.
- [146] 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](https://doi.org/10.1007/JHEP02(2013)095). arXiv : [1211.6956](https://arxiv.org/abs/1211.6956) [[hep-ex](#)].
- [147] 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](https://arxiv.org/abs/2002.12223) [[hep-ex](#)].
- [148] 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](https://doi.org/10.1088/1748-0221/3/08/S08003). URL : <http://cds.cern.ch/record/1129811>.
- [149] 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>.
- [150] The CDF Collaboration. « Search for Higgs bosons predicted in two-Higgs-doublet models via decays to tau lepton pairs in  $1,96\text{ TeV } p\bar{p}$  collisions ». *Physical Review Letters* **103** (2009). DOI : [10.1103/PhysRevLett.103.201801](https://doi.org/10.1103/PhysRevLett.103.201801). arXiv : [0906.1014](https://arxiv.org/abs/0906.1014) [[hep-ex](#)].
- [151] 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](https://doi.org/10.1103/physrevlett.74.2626).



- [152] 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](https://doi.org/10.1088/1748-0221/5/03/t03021).
- [153] 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>.
- [154] The CMS Collaboration. *CMS TriDAS project : Technical Design Report*. T. 1. Technical Design Report CMS. Geneva : CERN. URL : <http://cds.cern.ch/record/706847>.
- [155] The CMS Collaboration. « Calibration of hadron calorimeter using isolated charged hadrons » (mai 2017). URL : <https://cds.cern.ch/record/2263758>.
- [156] 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](https://doi.org/10.1088/1748-0221/9/10/P10009). URL : <http://cds.cern.ch/record/1704291>.
- [157] The CMS Collaboration. « Evidence for the 125 GeV Higgs boson decaying to a pair of  $\tau$  leptons ». *Journal of High Energy Physics* **05** (20 jan. 2014). DOI : [10.1007/JHEP05\(2014\)104](https://doi.org/10.1007/JHEP05(2014)104). arXiv : [1401.5041v2](https://arxiv.org/abs/1401.5041v2) [hep-ex].
- [158] 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 : [10.1016/j.physletb.2012.08.021](https://doi.org/10.1016/j.physletb.2012.08.021). URL : <http://www.sciencedirect.com/science/article/pii/S0370269312008581>.
- [159] 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](https://doi.org/10.1007/jhep06(2013)081).
- [160] 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](https://doi.org/10.1016/j.physletb.2013.04.017). arXiv : [1302.2892](https://arxiv.org/abs/1302.2892) [hep-ex].
- [161] The CMS Collaboration. « Search for neutral Higgs bosons decaying to tau pairs in  $pp$  collisions at  $\sqrt{s} = 7$  TeV ». *Physics Letters* **B713** (2012), p. 68-90. DOI : [10.1016/j.physletb.2012.05.028](https://doi.org/10.1016/j.physletb.2012.05.028). arXiv : [1202.4083](https://arxiv.org/abs/1202.4083) [hep-ex].
- [162] The CMS Collaboration. « The performance of the CMS muon detector in proton-proton collisions at  $\sqrt{s} = 7$  TeV at the LHC ». *Journal of Instrumentation* **8** (juin 2013). DOI : [10.1088/1748-0221/8/11/P11002](https://doi.org/10.1088/1748-0221/8/11/P11002). URL : <https://cds.cern.ch/record/1558674>.
- [163] 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](https://doi.org/10.22323/1.321.0084). URL : <https://cds.cern.ch/record/2637093>.
- [164] 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>.
- [165] The CMS Collaboration. « CMS ECAL first results with 2016 data » (juin 2016). URL : <http://cds.cern.ch/record/2194169>.
- [166] The CMS Collaboration. « CMS ECAL Response to Laser Light » (mar. 2019). URL : <https://cds.cern.ch/record/2668200>.
- [167] The CMS Collaboration. *CMS Luminosity – Public Results*. URL : <https://twiki.cern.ch/twiki/bin/view/CMSPublic/LumiPublicResults>.
- [168] 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>.
- [169] 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>.

- [170] 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>.
- [171] The CMS Collaboration. « First results from the CMS SiPM-based hadronic endcap calorimeter ». Geneva, août 2018. DOI : [10.1088/1742-6596/1162/1/012009](https://cds.cern.ch/record/2636475). URL : <https://cds.cern.ch/record/2636475>.
- [172] 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>.
- [173] 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](https://cds.cern.ch/record/111002).
- [174] 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>.
- [175] The CMS Collaboration. « The CMS Particle Flow Algorithm ». *EPJ Web of Conferences* **191** (2018). DOI : [10.1051/epjconf/201819102016](https://cds.cern.ch/record/2678077). URL : <https://cds.cern.ch/record/2678077>.
- [176] The CMS Collaboration. « ECAL 2016 refined calibration and Run2 summary plots » (avr. 2020). URL : <https://cds.cern.ch/record/2717925>.
- [177] The CMS Collaboration. « Energy calibration and resolution of the CMS electromagnetic calorimeter in  $pp$  collisions at  $\sqrt{s} = 7\text{ TeV}$  ». *Journal of Instrumentation* **8** (juin 2013). DOI : [10.1088/1748-0221/8/09/P09009](https://cds.cern.ch/record/1554142). URL : <https://cds.cern.ch/record/1554142>.
- [178] The CMS Collaboration. *Overview of the CMS electromagnetic calorimeter*. Rapp. tech. Geneva : CERN, 1999. DOI : [10.1016/S0920-5632\(99\)00544-7](https://cds.cern.ch/record/421977). URL : <https://cds.cern.ch/record/421977>.
- [179] The CMS Collaboration. « HCAL Calibration in 2016 » (mai 2017). URL : <https://cds.cern.ch/record/2263759>.
- [180] The CMS Collaboration. « HCAL Calibration Status in Summer 2017 » (mai 2017). URL : <https://cds.cern.ch/record/2281146>.
- [181] The CMS Collaboration. « HCAL Energy Reconstruction Performance » (nov. 2016). URL : <https://cds.cern.ch/record/2235509>.
- [182] The CMS Collaboration. « HCAL Out Of Time Pileup Subtraction and Energy Reconstruction » (mai 2018). URL : <https://cds.cern.ch/record/2320408>.
- [183] The CMS Collaboration. « The CMS detector magnet ». *IEEE Transactions on Applied Superconductivity* **10.1** (2000). DOI : [10.1109/77.828255](https://cds.cern.ch/record/438917). URL : [http://cds.cern.ch/record/438917](https://cds.cern.ch/record/438917).
- [184] The CMS Collaboration. « HF and HEP17 : phase1 upgrade performances » (oct. 2017). URL : <https://cds.cern.ch/record/2288359>.
- [185] 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](https://cds.cern.ch/record/1204013).
- [186] 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](https://cds.cern.ch/record/2622157).
- [187] 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>.
- [188] 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](https://cds.cern.ch/record/1260000).

- [189] 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](https://doi.org/10.1088/1748-0221/12/02/p02014).
- [190] 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](https://doi.org/10.1140/epjc/s10052-016-3988-x). arXiv : [1512.00815](https://arxiv.org/abs/1512.00815) [hep-ex].
- [191] The CMS Collaboration. « Performance of photon reconstruction and identification with the CMS detector in proton-proton collisions at  $\sqrt{s} = 8$  TeV ». *Journal of Instrumentation* **10** (fév. 2015). DOI : [10.1088/1748-0221/10/08/P08010](https://doi.org/10.1088/1748-0221/10/08/P08010). URL : <https://cds.cern.ch/record/1988093>.
- [192] 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](https://doi.org/10.1088/1748-0221/11/01/P01019). arXiv : [1510.07488](https://arxiv.org/abs/1510.07488) [physics.ins-det].
- [193] 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](https://doi.org/10.1007/JHEP11(2015)071). arXiv : [1506.08329](https://arxiv.org/abs/1506.08329) [hep-ex].
- [194] 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](https://doi.org/10.1016/j.physletb.2015.11.042). arXiv : [1508.01437](https://arxiv.org/abs/1508.01437) [hep-ex].
- [195] The CMS Collaboration. « The CMS trigger system ». *Journal of Instrumentation* **12.1** (jan. 2017). DOI : [10.1088/1748-0221/12/01/P01020](https://doi.org/10.1088/1748-0221/12/01/P01020). URL : <https://cds.cern.ch/record/2212926>.
- [196] The CMS Collaboration. « CMS set of posters (En & Fr) updated 2019 » (mar. 2020). URL : <https://cds.cern.ch/record/2712624>.
- [197] The CMS Collaboration. *The Phase-1 Upgrade of the CMS Pixel Detector*. Rapp. tech. CMS-CR-2017-135. 06. Geneva : CERN, mai 2017. DOI : [10.1088/1748-0221/12/07/C07009](https://doi.org/10.1088/1748-0221/12/07/C07009). URL : <https://cds.cern.ch/record/2265423>.
- [198] The CMS Collaboration. « Noise in Phase 1 HF detector in 2017 » (mai 2017). URL : <https://cds.cern.ch/record/2281147>.
- [199] The CMS Collaboration. *Performance of missing transverse momentum in  $pp$  collisions at  $\sqrt{s} = 13$  TeV using the CMS detector*. Rapp. tech. Geneva : CERN, 2018. URL : <https://cds.cern.ch/record/2628600>.
- [200] 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>.
- [201] The CMS Collaboration. « Results related to the Phase1 HE upgrade » (mai 2018). URL : <https://cds.cern.ch/record/2320857>.
- [202] The CMS Collaboration. « « ZOOM » : Drawings of the CMS detector with SketchUp » (juin 2012). URL : <https://cds.cern.ch/record/2629326>.
- [203] 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](https://doi.org/10.1088/1748-0221/14/06/p06032).
- [204] 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](https://doi.org/10.1088/1748-0221/12/10/P10003). arXiv : [1706.04965v2](https://arxiv.org/abs/1706.04965v2) [physics.ins-det]. URL : <http://stacks.iop.org/1748-0221/12/i=10/a=P10003>.
- [205] The CMS Collaboration. « Performance of the CMS muon detector and muon reconstruction with proton-proton collisions at  $\sqrt{s} = 13$  TeV ». *Journal of Instrumentation* **13** (avr. 2018). DOI : [10.1088/1748-0221/13/06/P06015](https://doi.org/10.1088/1748-0221/13/06/P06015). URL : <https://cds.cern.ch/record/2313130>.

- [206] The CMS Collaboration. « Search for additional neutral MSSM Higgs bosons in the di-tau final state in  $pp$  collisions at  $\sqrt{s} = 13$  TeV ». *Journal of High Energy Physics* **09**.007 (sept. 2018). DOI : [10.1007/JHEP09\(2018\)007](https://doi.org/10.1007/JHEP09(2018)007).
- [207] 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](https://doi.org/10.1088/1748-0221/13/05/p05011).
- [208] 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](https://doi.org/10.1140/epjc/s10052-019-7499-4). URL : <https://cds.cern.ch/record/2669320>.
- [209] The CMS Collaboration. « Measurement of differential cross sections for inclusive isolated-photon and photon+jets production in proton-proton collisions at  $\sqrt{s} = 13$  TeV ». *European Physical Journal* **C79**.20 (juil. 2018). DOI : [10.1140/epjc/s10052-018-6482-9](https://doi.org/10.1140/epjc/s10052-018-6482-9). URL : <http://cds.cern.ch/record/2628267>.
- [210] 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](https://doi.org/10.1088/1748-0221/13/10/P10034). URL : <https://cds.cern.ch/record/2629890>.
- [211] 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>.
- [212] 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](https://doi.org/10.1088/1748-0221/3/08/S08004). URL : <http://cds.cern.ch/record/1129810>.
- [213] 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>.
- [214] The CMS Collaboration. *The CMS magnet project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : <http://cds.cern.ch/record/331056>.
- [215] The CMS Collaboration. *The CMS muon project : Technical Design Report*. Technical Design Report CMS. Geneva : CERN, 1997. URL : <https://cds.cern.ch/record/343814>.
- [216] 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>.
- [217] The DØ Collaboration. « Observation of the top quark ». *Physical Review Letters* **74**.14 (avr. 1995), p. 2632-2637. DOI : [10.1103/physrevlett.74.2632](https://doi.org/10.1103/physrevlett.74.2632).
- [218] The DØ Collaboration. « Search for Higgs bosons decaying to  $\tau\tau$  pairs in  $p\bar{p}$  collisions at  $\sqrt{s} = 1,96$  TeV ». *Physics Letters* **B707** (2012), p. 323-329. DOI : [10.1016/j.physletb.2011.12.050](https://doi.org/10.1016/j.physletb.2011.12.050). arXiv : [1106.4555](https://arxiv.org/abs/1106.4555) [hep-ex].
- [219] The DØ Collaboration. « Measurement of the  $B^0_s$  lifetime in the exclusive decay channel  $B^0_s \rightarrow J/\Psi\phi$  ». *Physical Review Letters* **94** (fév. 2005). DOI : [10.1103/physrevlett.94.042001](https://doi.org/10.1103/physrevlett.94.042001).
- [220] The LHCb Collaboration. « The LHCb Detector at the LHC ». *Journal of Instrumentation* **3**.S08005 (2008). DOI : [10.1088/1748-0221/3/08/S08005](https://doi.org/10.1088/1748-0221/3/08/S08005). URL : <http://cds.cern.ch/record/1129809>.
- [221] 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](https://doi.org/10.1088/1748-0221/3/08/S08006). URL : <http://cds.cern.ch/record/1129808>.
- [222] 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>.
- [223] 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](https://doi.org/10.1103/PhysRevLett.89.011301).



- [224] 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](https://doi.org/10.1103/PhysRevLett.81.1562).
- [225] 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](https://doi.org/10.1088/1748-0221/3/08/S08007). URL : <http://cds.cern.ch/record/1129807>.
- [226] L. TORTEROTOT. « Search for additional neutral Higgs bosons decaying to  $\tau$  leptons pairs in the CMS experiment at the LHC ». *JRJC 2019. Book of Proceedings*. Août 2020, p. 53-56. URL : <https://hal.archives-ouvertes.fr/hal-02971995>.
- [227] G. TOUQUET. « Search for an additional neutral MSSM Higgs boson decaying to tau leptons with the CMS experiment ». Thèse de doct. Université Claude Bernard Lyon 1, oct. 2019. URL : <https://hal.archives-ouvertes.fr/tel-02526393>.
- [228] S. WEINBERG. « A model of leptons ». *Physical Review Letters* **19** (21 nov. 1967), p. 1264-1266. DOI : [10.1103/PhysRevLett.19.1264](https://doi.org/10.1103/PhysRevLett.19.1264).
- [229] J. WESS & B. ZUMINO. « Supergauge transformations in four dimensions ». *Nuclear Physics* **B70.1** (1974), p. 39-50. DOI : [10.1016/0550-3213\(74\)90355-1](https://doi.org/10.1016/0550-3213(74)90355-1). URL : <http://www.sciencedirect.com/science/article/pii/0550321374903551>.
- [230] 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](https://doi.org/10.1140/epjc/s2004-01960-8).
- [231] M. WOBISCH & T. WENGLER. « Hadronization Corrections to Jet Cross Sections in Deep-Inelastic Scattering » (1999). arXiv : [hep-ph/9907280](https://arxiv.org/abs/hep-ph/9907280) [hep-ph].
- [232] 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](https://doi.org/10.1103/PhysRev.105.1413).