Chapter 14

References

Notes:

a) CMS Notes are available at http://cmsdoc.cern.ch/docall.shtml unless otherwise noted.

b) References marked **doi** should be prefixed with http:dx.doi.org/.

[1] **CMS** Collaboration, CMS Collaboration, "The TriDAS Project Technical Design Report, Volume 2: Data Acquisition and High-Level Trigger," *CERN/LHCC* **2002-26** (2002). CMS TDR 6.2.

[2] M. Lamont, "Estimates of Annual Proton Doses in the LHC," *CERN LHC Project Note* **375** (2005).

[3] R. Rattazzi, "Transplanckian collisions at future accelerators," arXiv:hep-ph/0205265.

[4] T. S. Virdee, "Detectors at LHC," *Phys. Rept.* **403-404** (2004) 401–434.

[5] **CMS** Collaboration, CMS Collaboration, "The Compact Muon Solenoid Technical Proposal," *CERN/LHCC* **1994-38** (1994). LHCC/P1.

[6] **CMS** Collaboration, CMS Collaboration, "The Magnet Project Technical Design Report," *CERN/LHCC* **1997-10** (1997). CMS TDR 1.

[7] **CMS** Collaboration, CMS Collaboration, "The Muon Project Technical Design Report," *CERN/LHCC* **1997-32** (1997). CMS TDR 3.

[8] **CMS** Collaboration, CMS Collaboration, "The Electromagnetic Calorimeter Technical Design Report," *CERN/LHCC* **1997-33** (1997). CMS TDR 4, Addendum CERN/LHCC 2002-027.

[9] **CMS** Collaboration, CMS Collaboration, "The Hadron Calorimeter Technical Design Report," *CERN/LHCC* **CMS TDR 2** (1997). 1997-31.

[10] M. G. Albrow *et al.*, "A uranium scintillator calorimeter with plastic-fibre readout," *Nucl. Instr. and Meth.* **A256** (1987). doi:10.1016/0168-9002(87)91035-7.

[11] V. I. Kryshkin and A. I. Ronzhin, "An optical fiber readout for scintillator calorimeters," *Nucl. Instr. and Meth.* **A247** (1986). doi:10.1016/0168-9002(86)90420-1.

[12] G. W. Foster, J. Freeman, and R. Hagstrom, "Scintillating tile/fiber calorimetry development at FNAL," *Nucl. Phys. Proceedings Supplements* **B23** (1991). doi:10.1016/0920-5632(91)90035-D.

[13] **HCAL** Collaboration, "Design, Performance, and Calibration of CMS Hadron-Barrel Calorimeter Wedges," *submitted to Nucl. Inst. Meth.* (2005).

[14] **HCAL** Collaboration, "Design, Performance, and Calibration of CMS Hadron-Endcap Calorimeter Wedges," *submitted to Nucl. Inst. Meth.* (2005).

[15] L. Borrello, A. Messineo, E. Focardi, and A. Macchiolo, "Tracking TK-Silicon," *CMS NOTE* **2003-020** (2002).

[16] M. French *et al.*, "Design and Results from the APV25, a Deep Sub-micron CMOS Front-End Chip for the CMS Tracker," *Nucl. Instr. Meth.* **A534** (2001) 359–365. doi:10.1016/S0168-9002(01)00589-7.

[17] J. Troska *et al.*, "Optical Readout and Control Systems for the CMS Tracker," *Nuclear Science Symposium* **1** (2002) 233–237.

[18] J. Coughlan *et al.*, "The CMS Tracker Front-End Driver,". Proc. of the 9th Workshop on Electronics for LHC Experiments.

[19] F. Drouhin *et al.*, "The CERN CMS Silicon Strip Tracker Control System,". CMS-CR 2004/032.

[20] E. Noah *et al.*, "Qualification of the CMS Tracker Control Link Digital Optohybrid,". Proc. of the 10th Workshop on Electronics for LHC Experiments.

[21] **CMS** Collaboration, CMS Collaboration, "The TriDAS Project Technical Design Report, Volume 1: The Trigger Systems," *CERN/LHCC* **2000-38** (2000). CMS TDR 6.1.

[22] **CMS** Collaboration, CMS Collaboration, "The Computing Project Technical Design Report," *CERN/LHCC* **2005-23** (2005). CMS TDR 7.

[23] "ORCA: CMS Reconstruction Package." Site located at http://cmsdoc.cern.ch/orca.

[24] M. Case *et al.*, "Detector Description Domain Architecture and Data Model," *CMS NOTE* **2001-057** (2001).

[25] A. Aert *et al.*, "Detector Geometry Database," *CMS Internal* **2004-011** (2004).

[26] **GEANT4** Collaboration, S. Agostinelli *et al.*, "GEANT4: A simulation toolkit," *Nucl. Instr. and Meth.* **A506** (2003) 250–303. doi:10.1016/S0168-9002(03)01368-8.

[27] R. Brun, F. Bruyant, M. Maire, A. C. McPherson, and P. Zanarini, "GEANT3,". CERN Program Library W5013: CERN-DD/EE/84-1.

[28] P. Arce and M. Wadhwa, "Deviation in Matter of 45 GeV Muons in GEANT 3 and GEANT 4, A Comparison with L3 Data," *CMS NOTE* **2000-016** (2000).

[29] **FIXME:** ??, "??," *??*

[30] G. Grindhammer and S. Peters, "The parametrized simulation of electromagnetic showers in homogeneous and sampling calorimeters," *Presented at the Int. Conf. of Monte-Carlo Simulation in High Energy and Nuclear Physics, Tallahassee, Florida, USA* (1993). `hep-ex/0001020`.

[31] M. R. G. Grindhammer and S. Peters, "**FIXME:** title?,". `SLAC-PUB-5072,` `H1-09/87-71`.

[32] "IGUANA Web Site." Located at `http://iguana.web.cern.ch/iguana/`.

[33] G. Alverson, I. Gaponenko, L. Taylor, and L. Tuura, "The CMS Interactive Graphical User Analysis (IGUANA) "Functional Prototype" Software," *CMS IN* **2000-052** (2002).

[34] G. Alverson, G. Eulisse, S. Muzaffar, I. Osborne, L. Taylor, and L. A. Tuura, "IGUANA Architecture, Framework and Toolkit for Interactive Graphics," *ECONF* **C0303241** (2003) MOLT008, `arXiv:cs.se/0306042`.

[35] G. Alverson, I. Osborne, L. Taylor, and L. Tuura, "A Coherent and Non-Invasive Open Analysis Architecture and Framework with Applications in CMS," in *Proceedings of Computing in High Energy (CHEP 2001)*, H.S. Chen, ed. Science Press, Beijing/New York, Beijing, 3-7 Sept, 2001.

[36] G. Alverson, G. Eulisse, S. Muzaffar, I. Osborne, L. Taylor, and L. A. Tuura, "IGUANA: A high-performance 2D and 3D visualisation system," *Nucl. Instrum. Meth.* **A534** (2004) 143–146. `doi:10.1016/j.nima.2004.07.036`.

[37] "Qt-ROOT home page." `http://www-linux.gsi.de/~go4/qtroot/html/qtroot.html`.

[38] "CMS Detector Description Database home page." `http://cmsdoc.cern.ch/cms/software/ddd/www`.

[39] "The Concurrent Version System." `http://www.nongnu.org/cvs/`.

[40] "CMS Coding Conventions." cvsserver:CMSSW/Documentation/CodingRules.

[41] "Nicos." `http://www.usatlas.bnl.gov/computing/software/nicos/`.

[42] G. Eulisse *et al.*, "A coherent environment of software improvement tools for CMS," *Nucl Inst. Meth. A* **534** (2004) 138–142. `doi:10.1016/j.nima.2004.07.035`.

[43] "Savannah home page." `http://savannah.gnu.org/`.

[44] "xcmsi home page." `http://cmsdoc.cern.ch/cms/oo/repos_standalone/download/index.php`.

[45] "Unit test - Wikipedia." `http://en.wikipedia.org/wiki/Unit_testing`.

[46] "Spi - CppUnit." `http://spi.cern.ch/Components/UnitTesting/UserDocumentation/Web/HowTo-TestFramework-CppUnit.html`.

[47] "Oval." `http://spi.cern.ch/testing/HowTo-TestFramework-Oval.html`.

[48] M. Aguilar Benitez *et al.*, "Construction and test of the final CMS Barrel Drift Tube Muon chamber prototype," *Nucl. Instr. and Meth.* **A480** (2002) 658.

[49] C. Albajar *et al.*, "Test beam analysis of the first CMS drift tube muon chamber," *Nucl. Instr. and Meth.* **A525** (2004) 465.

[50] F. Cavallo *et al.*, "Test of MB3 Muon Barrel Drift Chamber with Cosmic Rays," *CMS Note* **2003/017** (2003).

[51] M. Abbrescia *et al.*, "Beam test results on double-gap resistive plate chambers proposed for CMS experiment," *Nucl. Instr. and Meth.* **A414** (1998) 135.

[52] P. Arce *et al.*, "Bunched beam test of the CMS drift tubes local muon trigger," *Nucl. Instr. and Meth.* **A534** (2004) 441.

[53] J. Christiansen, "High Performance Time to Digital Converter," *CERN EP-MIC* (2002).

[54] M. Husejko *et al.*, "Readout system for CMS RPC Muon Trigger," *Proceedings of SPIE* **5775** (2005) 121–130. doi:10.1117/12.610600.

[55] N. Amapane *et al.*, "Description of Detector Raw Data Formats," *FIXME: CMS note, in preparation* (2005).

[56] R. Breedon *et al.*, "Performance and Radiation Testing of a Low-Noise Switched Capacitor Array for the CMS Endcap Muon System," *Proceedings of the Sixth Workshop on Electronics for LHC Experiments, Krakow, Poland* **CERN/LHCC/2000-041** (2000) 187–191.

[57] T. Ferguson *et al.*, "Anode front-end electronics for the cathode strip chambers of the CMS Endcap Muon detector," *Nucl. Instrum and Meth.* **A 539** (2005) 386.

[58] P. Arce *et al.*, "Performance test of the CMS link alignment system," *Nucl.Instr. Meth A492* **A492** (2002).

[59] D. Eartly *et al.*, "ISR 2000 EMU Alignment Test Results Summary," *CMS IN* (2002/004).

[60] M. Benettoni *et al.*, "Study of the Internal Alignment of the CMS Muon Barrel Drift Chambers using Cosmic Ray Tracks," *CMS Note* **2004/001** (2004).

[61] P. Arce and A. López-Virto, "CMS Object Oriented Code for Optical Alignment (COCOA)," *CMS note* (2002/060).

[62] F. Matorras *et al.*, "Muon system alignment with tracks," *FIXME: CMS Note in preparation* (2005).

[63] V. Blobel and C. Kleinwort, "A New Method for High-Precision Aligment of Track Detectors," *Proc. of Conference on: Advanced Statistical Techniques in Particle Physics, Durham* (2002). hep-ex/0208021.

[64] I. Belotelov *et al.*, "Effect of Misalignment scenarios on muon reconstruction," *FIXME: CMS Note in preparation* (2005).

[65] V. Aerts *et al.*, "Status and Perspectives of Detector Databases in the CMS Experiment at the LHC," *CMS Note* (2004/026).

[66] "DT costruction database,"
$http : //oraweb03.cern.ch : 9000/pls/cms_mb_prod/chambers.main.$

[67] "CSC databases," $http : //cmsdoc.cern.ch/cms/CSC/CERN/db.html$.

[68] "CSC Test Beam database,"
$http : //oraweb03.cern.ch : 9000/pls/cms_emu_cern.pro/run_log1.top_page$.

[69] "Barrel RPC Construction database," $http : //webcms.ba.infn.it/rpc$.

[70] "EndCap RPC Construction database," $http : //cms - isr - endcap - rpc.web.cern.ch/cms - isr - endcap - rpc/production_db//Main_db.htm$.

[71] J. Puerta-Pelayo, M. C. Fouz, and P. Garcia-Abia, "Parametrization of the Response of the Muon Barrel Drift Tubes," *CMS Note* (2005/018).

[72] R. Veenhof, "Garfield, a Drift Chamber simulation program user's guide," *CERN Program Library W5050* (1994).

[73] R. Wilkinson and P. T. Cox, "Simulating the Endcap Muon CSC System in ORCA," *CMS Note* **2001/013** (2003).

[74] E. Gatti *et al.*, "Analysis of the position resolution in centroid measurements in MWPC," *Nucl. Instrum and Meth.* **A 188** (1988) 327–346.

[75] S. Durkin *et al.*, "Validation of the Simulation for the CMS Endcap Muon CSC Front-end Electronics," **FIXME: CMS ANA Note**, *in preparation* (2005).

[76] I. Belotelov *et al.*, "Electromagnetic Secondaries and Punchthrough in ME1/1," **FIXME: CMS ANA Note**, *in preparation* (2005).

[77] M. Abbrescia *et al.*, "Cosmic Ray Tests of Double-gap Resistive Plate Chambers for the CMS Experiment," *Nucl. Instrum and Meth.* **A 550** (2005) 116.

[78] R. Kinnunen *et al.*, "Impact of Muon Trigger Coverage on Physics," *CMS Note* **1998/020** (1998).

[79] D. Acosta *et al.*, "Design features and test results of the CMS endcap muon chambers," *Nucl. Instr. and Meth.* **A494** (2002) 504.

[80] D. Acosta *et al.*, "Development and test of a prototype regional track finder for the Level-1 trigger of the cathode strip chamber muon system of CMS," *Nucl. Instr. and Meth.* **A496** (2003) 64.

[81] E. Boyd *et al.*, "Trigger studies for the CSC muon system of CMS," *Nucl. Instr. and Meth.* **FIXME:** In preparation.

[82] H. Sakulin, "Improved di-muon trigger rate simulation methods for the CMS experiment at LHC," *J. Phys. G: Nucl. Part. Phys.* **30** (2004) N45.

[83] Z. P.L. *et al.*, "Fine syncronization of the muon Drift Tubes Local Trigger," **FIXME: CMS note in preparation** *(CMS-IN 2004/45 exists)* (2005).

[84] C. Collaboration, "The electromagnetic Calorimeter Project TDR," *CERN/LHCC 97-33* **CMS TDR 4** (1997).

[85] **Particle Data Group** Collaboration, S. Eidelman *et al.*, "Review of particle physics," *Phys. Lett.* **B592** (2004) 1.

[86] A. A. Annenkov, M. V. Korzhik, and P. Lecoq, "Lead tungstate scintillation material," *Nucl. Instrum. Meth.* **A490** (2002) 30–50.

[87] X. D. Qu, L. Y. Zhang, and R. Y. Zhu, "Radiation induced color centers and light monitoring for lead tungstate crystals," *IEEE Trans. Nucl. Sci.* **47** (2000) 1741–1747.

[88] D. Graham and C. Seez, "Simulation of Longitudinal Light Collection Uniformity in PbWO-4 crystals," *CMS Note* **1996/002** (1996).

[89] R. Y. Zhu, "Radiation damage in scintillating crystals," *Nucl. Instrum. Meth.* **A413** (1998) 297–311.

[90] M. Huhtinen, P. Lecomte, D. Luckey, F. Nessi-Tedaldi, and F. Pauss, "High-energy proton induced damage in PbWO-4 calorimeter crystals," *Nucl. Instrum. Meth.* **A545** (2005) 63–87.

[91] K. Deiters *et al.*, "Double screening tests of the CMS ECAL avalanche photodiodes," *Nucl. Instr. and Meth.* **A543** (2005) 549–558. doi:10.1016/j.nima.2005.01.088.

[92] P. Wertelaers *et al.*, "CMS ECAL EDR-4, Volume 2: ECAL Preshower," *Meeting* **2000-054** (2000).

[93] M. Raymond *et al.*, "The MGPA Electromagnetic Calorimeter Readout Chip for CMS," *IEEE* **Proceedings of the 9th Workshop on Electronics for the LHC Experiments** (2003).

[94] G. Minderico *et al.*, "A CMOS low power, quad channel, 12 bit, 40 Ms/s pipelined ADC for application in particle physics calorimetry," *CERNLHCC* **2003-055, Proceedings of the 9th Workshop on Electronics for the LHC Experiments** (2003).

[95] K. Kloukinas *et al.*, "Charaterization and production testing of a quad 12 bit 40 Ms/s A/D converter with automatic digital range selection for calorimetry," *Proceedings of 11th Work. on Electronics for the LHC and FutureExperiments, Heidelberg Sept. 12-16, 2005* (2005).

[96] M. Hansen, "The New Read Out Architecture for the CMS ECAL," *Proceedings of the 9th Work. on Electronics for the LHC Experiments, CERN-LHCC-2003-041* (2003).

[97] R. Alemany *et al.*, "Overview of the ECAL Off-Detector electronics of the CMS experiment." Presented at IEEE Nuclear Science Symposium, Roma, Italy, Oct. 18-21, 2004, 2004.

[98] N. Almeida *et al.*, "The selective readout processor for the CMS electromagnetic calorimeter,".

[99] W. Bialas *et al.*, "The Readout, Fast Control and Powering Architecture for the CMS Preshower,".

[100] P. Aspell *et al.*, "PACE3: A large dynamic range analogue memory ASIC assembly designed for the readout of silicon sensors in the LHC CMS Preshower,".

[101] K. Kloukinas *et al.*, "Kchip: a radiation tolerent digital data concentrator chip for the CMS Preshower detector,".

[102] P. Paganini and A. Romana, "A Package for a Detailed Digitization of ECAL Hits in ORCA," *CMS Internal Note* (2000).

[103] P. Paganini and I. van Vulpen, "Pulse Amplitude Reconstruction in the CMS ECAL Using the Weights Method," *CMS Note* **2004/025** (2004).

[104] R. Brunelière and A. Zabi, "," *CMS Note* **FIXME: in preparation** (2005).

[105] R. Brunelière, P. Jarry, and A. Zabi, "Energy resolution performance of the CMS electromagnetic calorimeter," *CMS Note* **Submitted to ECAL editorial board** (2005).

[106] J. Descamps and P. Jarry, "," *CMS Note* **Submitted to ECAL editorial board** (2005).

[107] E. Auffray *et al.*, "Performance of ACCOS, an automatic crystal quality control system for PWO," *Nucl. Instr. and Meth. A* **A456** (2001).

[108] E. Auffray *et al.*, "Cross-Calibration of Two Automatic Quality Control Systems for the CMS ECAL Crystals," *CMS Note* **2003/003** (2003).

[109] L. M. Barone *et al.*, "Improvement on PbWO4 Crystal Inter-calibration Precision from Light Yield Measurements at the INFN-ENEA Regional Center," *CMS Rapid Note* **2004/003** (2004).

[110] L. M. Barone *et al.*, "Correlation between the light yield and the longitudinal transmission in PBWO$_4$ crystals and the impact on the precision of the crystals inter-calibration," *CMS Rapid Note* **2004/005** (2004).

[111] F. Cavallari *et al.*, "Test-beam results on the performance of two matrices of PbWO$_4$ crystals for the CMS ECAL and comparison with laboratory measurements," *CMS Internal Note* (2001).

[112] F. Cavallari *et al.*, "Relative Light Yield comparison between laboratory and testbeam data for CMS ECAL PbWO$_4$ crystals," *CMS Rapid Note* **2004/002** (2004).

[113] K. Deiters *et al.*, "Test of the Feasibility of Pre-intercalibration of ECAL Supermodules with Cosmic Rays," *CMS IN* **2004/023** (2004).

[114] W. Bertl *et al.*, "Feasibility of Intercalibration of CMS ECAL Supermodules with Cosmic Rays," *CMS NOTE* **2004/036** (2004).

[115] M. Bonesini *et al.*, "Precalibration of the CMS electromagnetic calorimeter with cosmic ray," *CMS NOTE* **forthcoming** (2005).

[116] D. Futyan and C. Seez, "Intercalibration of ECAL Crystals in Phi Using Symmetry of Energy Deposition," *CMS Note* **2002/031** (2002).

[117] D. Futyan, "Intercalibration of the CMS Electromagnetic Calorimeter Using Jet Trigger Events," *CMS Note* **2004/007** (2004).

[118] I. Evangelou, "CMS Preshower in-situ absolute calibration,".

[119] P. Bloch *et al.*, "Performance of Si sensors irradiated to 5×10^{14} n/cm^2," *Nucl. Instr. and Meth.* **A517** (2004) 121–127.

[120] L. Zhang *et al.*, "Performance of the Monitoring Light Source for the CMS Lead Tungstate Crystal Calorimeter," *IEEE Trans. Nucl. Sci.* **52** (2005).

[121] C.-S. group, "The CMS-ECAL Monitoring System: Data Generation, Acquisition And Processing At LHC," *CMS Internal Note* (2002).

[122] A. V. Lysebetten and P. Verrecchia, "Performance and measurements of the light monitoring system for CMS-ECAL from 2002 test beam data," *CMS Rapid Note* **2004/001** (2004).

[123] P. Bonamy *et al.*, "The ECAL calibration: Use of the light monitoring system Version 2.0," *CMS Note* **1998/013** (1998).

[124] E. Meschi *et al.*, "Electron Reconstruction in the CMS Electromagnetic Calorimeter," *CMS Note* **2001/034** (2001).

[125] G. Daskalakis and I. van Vulpen, "Position Resolution in the CMS ECAL Using 2003 Testbeam Data," *CMS Internal Note* (2004).

[126] F. Cavallari *et al.*, "Database Requirements for the CMS ECAL," *CMS Internal Note* (2005).

[127] P. Adzic *et al.*, "Results of the first performance tests of the CMS electromagnetic calorimeter," *EPJC* **Submitted** (2005).

[128] Unknown, "APD dark current note/paper,".

[129] **HCAL** Collaboration, "Synchronization and Timing in the CMS Hadron Calorimeter," *submitted to Nucl. Inst. Meth.* (2005).

[130] "OSCAR: CMS Simulation Package." http://cmsdoc.cern.ch/oscar.

[131] **CMS-HCAL** Collaboration, V. V. Abramov *et al.*, "Studies of the response of the prototype CMS hadron calorimeter, including magnetic field effects, to pion, electron, and muon beams," *Nucl. Instrum. Meth.* **A457** (2001) 75–100, arXiv:hep-ex/0007045. doi:10.1016/S0168-9002(00)00711-7.

[132] S. Banerjee and S. Banerjee, "Validation of Geant4 Using 1986 CMS HCAL Test Beam Data," *CMS NOTE* **2004-032** (2004).

[133] V. D. Elvira, "Validation of Geant4 Physics Using 1996 CMS HCAL Test Beam Data," *CMS NOTE* **2004-021** (2004).

[134] V. D. Elvira, "Measurement of the Pion Energy Response and Resolution in the Hadronic Barrel Callorimeter using CMS HCAL Test Beam 2002 Experiment," *CMS NOTE* **2004-020** (2004).

[135] C. Amsler *et al.*, "A high resolution silicon beam telescope," *Nucl. Instr. and Meth.* **A480** (2002) 501–507.

[136] A. Dorokhov, "Performance of radiation hard pixel sensors for the CMS experiment". PhD thesis, Universität Zürich, 2005.

[137] T. Rohe *et al.*, "Position dependence of charge collection in prototype sensors for the CMS pixel detector," *IEEE Trans. Nucl. Sci.* **51** (2004) 1150–1157. doi:10.1109/TNS.2004.829487.

[138] B. Henrich and R. Kaufmann, "Lorentz-angle in irradiated silicon," *Nucl. Instr. and Meth.* **A477** (2002) 304–307.

[139] A. Dorokhov *et al.*, "Tests of silicon sensors for the CMS pixel detector," *Nucl. Instr. and Meth.* **A530** (2004) 71–76, arXiv:physics/0311050.

[140] A. Dorokhov *et al.*, "Electric field measurement in heavily irradiated pixel sensors," arXiv:physics/0412036.

[141] S. Braibant *et al.*, "Investigation of design parameters for radiation hard silicon microstrip detectors," *Nucl. Instrum. Meth.* **A485** (2002) 343–361.

[142] C. Canali *et al.*, "Electron and Hole Drift Velocity Measurements in Silicon and Their Empirical Relation to Electric Field and Temperature," *IEEE Trans. on Electron Devices* **22** (1975) 1045–1047.

[143] V. Bartsch *et al.*, "An algorithm for calculating the Lorentz angle in silicon detectors," *Nucl. Instrum. Meth.* **A497** (2003) 389–396, arXiv:physics/0204078.

[144] R. Bainbridge *et al.*, "Commissioning procedures for the silicon strip tracker readout system," *CMS Note 2005/xxx*.

[145] S. Cucciarelli, D. Kotlinski, and T. Todorov, "Position Determination of Pixel Hits," *CMS NOTE* **2002-049** (2002).

[146] I. Lokhtin, "The HYDJET fast event generator,". http://lokhtin.home.cern.ch/lokhtin/hydro/hydjet.html.

[147] R. Fruhwirth, P. Kubinec, W. Mitaroff, and M. Regler, "Vertex reconstruction and track bundling at the LEP collider using robust algorithms," *Comput. Phys. Commun.* **96** (1996) 189–208. doi:10.1016/0010-4655(96)00040-9.

[148] T. Speer, K. Prokofiev, R. Fruhwirth, W. Waltenberger, and P. Vanlaer, "Vertex Fitting in the CMS Tracker," *CMS Note* **Not yet public** (2005).

[149] W. Waltenberger, "Development of Vertex Finding and Vertex Fitting Algorithms for CMS". PhD thesis, Technischen Universität Wien, 2004.

[150] R. Fruhwirth, W. Waltenberger, K. Prokofiev, T. Speer, and P. Vanlaer, "New developments in vertex reconstruction for CMS," *Nucl. Instr. and Meth.* **A502** (2003) 699–701. doi:10.1016/S0168-9002(03)00548-5.

[151] J. D'Hondt, P. Vanlaer, R. Fruhwirth, and W. Waltenberger, "Sensitivity of robust vertex fitting algorithms," *IEEE Trans. Nucl. Sci.* **51** (2004) 2037–2044. doi:10.1109/TNS.2004.832296.

[152] R. Fruhwirth and T. Speer, "A Gaussian-sum filter for vertex reconstruction," *Nucl. Instrum. Meth.* **A534** (2004) 217–221. doi:10.1016/j.nima.2004.07.090.

[153] K. Prokofiev and T. Speer, "A Kinematic fit and a decay chain reconstruction library," *CMS Analysis Note* **2004/20** (2004).

[154] K. Prokofiev and T. Speer, "A kinematic fit and a decay chain reconstruction library," *CERN Yellow Report* **CERN-2005-002** (2005). Proc. of the 2004 Conference for Computing in High-Energy and Nuclear Physics (CHEP 04), Interlaken, Switzerland, 2004.

[155] S. Eidelman *et al.*, "The Review of Particle Physics," *Phys. Lett.* **B592** (2004).

[156] D. K. S. Cucciarelli, M. Konecki and T. Todorov, "Track-Parameter Evaluation and Primary-Vertex Finding with the Pixel Detector," *CMS Note* **2003/026** (2003).

[157] S. Cucciarelli, "The Performance of the CMS Pixel Detector and the Primary Vertex Finding," *CMS Conference Report* **2003/057** (2003).

[158] P. Vanlaer, V. Barbone, N. De Filippis, T. Speer, O. Buchmueller, and F.-P. Schilling, "Impact of Tracker Misalignment on Track and Vertex Reconstruction," *CMS Analysis Note* **2005/015** (2005).

[159] **CMS** Collaboration, P. Sphicas *et al.*, "Data Acquisition and High-Level Trigger: Technical Design Report," *CERN-LHCC* **2002-26** (2002).

[160] O. Buchmüller, "The Use of Beam Halo Muons, Beam Gas Events and Cosmic Muons for the Alignment of the CMS Tracker - A First Feasibility Study," *CMS Internal Note* **CMS-IN-2004/041** (2004).

[161] **TOTEM** Collaboration, K. Eggert *et al.*, "TOTEM Technical Design Report," *CERN-LHCC* **2004-002** (2004).

[162] V. Drollinger, "Simulation of Beam Halo and Cosmic Muons," *CMS Note* **CMS-Note-2005/012** (2005).

[163] I. Belotelov, O. Buchmüller, A. Heister, M. Thomas, T. Lampén, I. Gonzáles Caballero, P. Martínez, C. Martínez-Rivero, F. Matorras, and V. Valuev, "Simulation of Misalignment Scenarios for CMS Tracking Devices," *CMS Note* **CMS-Note-2005/XYZ** (2005). In preparation.

[164] V. Karimäki, A. Heikkinen, T. Lampén, and T. Lindén, "Sensor Alignment by Tracks," *CMS Conference Report* **CMS-CR-2003/022** (2003). Presented at CHEP 2003, La Jolla.

[165] V. Karimäki, T. Lampén, and F.-P. Schilling, "Track based alignment of composite detector structures," *CMS Note* **CMS-Note-2005/xyz** (2005). In preparation.

[166] R. Frühwirth and E. Widl, "A method for global alignment," *CMS Note* **CMS-Note-2005/xyz** (2005). In preparation.

[167] V. Blobel, "MILLEPEDE program description and code,". http://www.desy.de/~blobel.

[168] V. Blobel, "Private communication," 1997.

[169] R. Mcnulty, T. Shears, and A. Skiba, "A Procedure for Software Alignment of the CDF Silicon System," *CDF/DOC/Tracking/57000* (2001).

[170] P. Schleper, G. Steinbrück, and M. Stoye, "Software Alignment of the CMS Tracker using MILLEPEDE II," *CMS Analysis Note* **CMS-AN-2005/xyz** (2005). In preparation (to be upgraded to CMS note).

[171] T. Lampén, V. Karimäki, S. Saarinen, and O. Buchmüller, "Alignment Studies with the CMS Cosmic Rack using Cosmic and Test Beam Data," *CMS Analysis Note* **CMS-AN-2005/020** (2005). (to be upgraded to CMS Note).

[172] M. S. Mennea, A. Regano, and G. Zito, "CMS Tracker Visualization," *CMS Note 2004/009* (2004). To be updated.

[173] **FELIX** Collaboration, E. Lippmaa *et al.*, "FELIX: A full acceptance detector at the LHC,". CERN-LHCC-97-45.

[174] A. Ageev *et al.*, "A Full acceptance detector at the LHC (FELIX)," *J. Phys.* **G28** (2002) R117–R215.

[175] **TOTEM** Collaboration, V. Berardi *et al.*, "TOTEM: Technical design report Total cross section, elastic scattering and diffraction dissociation at the Large Hadron Collider at CERN,". CERN-LHCC-2004-002, Addendum CERN-LHCC-2004-020.

[176] M. G. Albrow *et al.*, "FP420: An R&D proposal to investigate the feasibility of installing proton tagging detectors in the 420-m region at LHC,". CERN-LHCC-2005-025.

[177] A. De Roeck, V. A. Khoze, A. D. Martin, R. Orava, and M. G. Ryskin, "Ways to detect a light Higgs boson at the LHC," *Eur. Phys. J.* **C25** (2002) 391–403, arXiv:hep-ph/0207042.

[178] B. E. Cox *et al.*, "Detecting the standard model Higgs boson in the W W decay channel using forward proton tagging at the LHC," arXiv:hep-ph/0505240.

[179] CMS and TOTEM Collaborations, "LOI on forward and diffractive physics," *CERN/LHCC 2006-xxx* (2006).

[180] A. Panagiotou, "CASTOR Review,". CMS week, 20/9/04.

[181] M. Livan, V. Vercesi, and R. Wigmans, "Scintillating fiber calorimetry,". CERN-95-02.

[182] G. Andvinzino *et al. Nucl. Instrum. Meth.* **A357** (1995) 350–362.

[183] G. Andvinzino *et al. Nucl. Instrum. Meth.* **A357** (1995) 369.

[184] M. Chiu, A. Denisov, E. Garcia, J. Katzy, and S. White, "Measurement of mutual Coulomb dissociation in s(NN)**(1/2) = 130-GeV Au + Au collisions at RHIC," *Phys. Rev. Lett.* **89** (2002) 012302, arXiv:nucl-ex/0109018.

[185] C. Adler *et al.*, "The RHIC zero degree calorimeters," *Nucl. Instr. and Meth.* **A470** (2001) 488–499, arXiv:nucl-ex/0008005.

[186] W. C. Turner *et al.*, "Status report on the development of instrumentation for bunch by bunch measurement and optimisation of luminosity in the LHC," *LBNL-45549* (2000).

[187] R. Arnaldi *et al.*, "Performances of zero degree calorimeters for the ALICE experiment," *Nucl. Instr. and Meth.* **A456** (2001) 248–258.

[188] **PHENIX** Collaboration, A. Denisov, "Common event characterization in the RHIC experiments," *Nucl. Phys.* **A698** (2002) 551–554.

[189] W. Smith. *private communication*.

[190] **ALICE** Collaboration, "The Alice Technical Proposal Vol. 3," *CERN/LHCC 1999-5* (1999).

[191] M. Arneodo *et al.*, "Diffractive Higgs: CMS/TOTEM Level-1 Trigger Studies," (2005). Proceedings of the HERA-LHC Workshop, DESY-CERN, 2004-2005.

[192] **CMS** Collaboration, CMS Collaboration, "The Tracker Project Technical Design Report," *CERN/LHCC* **1998-6** (1998). CMS TDR 5, Addendum CERN/LHCC 2000-016.

[193] R. Frühwirth, "Application of Kalman Filtering to Track and Vertex Fitting ," *Nucl. Instr. and Meth.* **A262** (1987) 444.

[194] V. Innocente, M. Maire, and E. Nagy, "GEANE: Average Tracking and Error Propagation Package," *CERN Program Library, IT-ASD W5013-E* (1991).

[195] V. Drollinger, "Simulation of Beam Halo and Cosmic Muons," *CMS Note* **2005/012** (2005).

[196] I. Azhgirey *et al.*, "Cascade simulations for the machine induced background study in the IR1 of the LHC," *CERN LHC Project Note* (2003).

[197] P. Y. O. Kodolova, I. Tomalin, "Expected Data Rates from the Silicon Strip Tracker," *CMS Note* **2002-047** (2002).

[198] M. Bedjidian *et al.*, "Dimuon Reconstruction in Heavy Ion Collisions Using a Detailed Description of CMS Geometry," *CMS NOTE* **1999/004** (1999).

[199] N. Amapane, M. Fierro, and M. Konecki, "High Level Trigger Algorithms for Muon Isolation," *CMS Note* **2002/040** (2002).

[200] S. Abdullin *et al.*, "Sensitivity of the muon isolation cut efficiency to the underlying event uncertainties," *CMS Analysis Note* **2005/018** (2005).

[201] O. Kodolova, "$J/\psi \to \mu^+\mu^-$ Triggering in Heavy Ion Collisions," *CMS AN note* **2003-002** (2003).

[202] G. Baur *et al.*, "Heavy Ion Physics in CMS," *CMS NOTE* **2000/060** (2000).

[203] PRS *et al.*, "Paper written from Ch 14 and 15 of DAQ TDR," 2005.

[204] T. C. Awes *et al.*, "A Simple Method of Shower Localization and Identification in Laterally Segmented Calorimeters," *Nucl. Instr. and Meth.* **A311** (1992).

[205] E. Eichten, I. Hinchliffe, K. D. Lane, and C. Quigg, "Super Collider Physics," *Rev. Mod. Phys.* **56** (1984) 579–707. doi:10.1103/RevModPhys.56.579.

[206] M. Carena and H. E. Haber, "Higgs boson theory and phenomenology ((V))," *Prog. Part. Nucl. Phys.* **50** (2003) 63–152, arXiv:hep-ph/0208209. doi:10.1016/S0146-6410(02)00177-1.

[207] **ATLAS and CMS** Collaboration, J. G. Branson *et al.*, "High transverse momentum physics at the Large Hadron Collider: The ATLAS and CMS Collaborations," *Eur. Phys. J. direct* **C4** (2002) N1.

[208] J. W. Rohlf, "Physics with jets at the LHC," *Acta Phys. Polon.* **B36** (2005) 469–479. Available at http://th-www.if.uj.edu.pl/acta/vol36/pdf/v36p0469.pdf.

[209] C. Bromberg *et al.*, "Observation of the Production of Jets of Particles at High Transverse Momentum and Comparison with Inclusive Single Particle Reactions," *Phys. Rev. Lett.* **38** (1977) 1447. doi:10.1103/PhysRevLett.38.1447.

[210] C. Bromberg *et al.*, "Experimental Tests of Quantum Chromodynamics in High P(T) Jet Production in 200-Gev/c Hadron - Proton Collisions," *Phys. Rev. Lett.* **43** (1979) 565. doi:10.1103/PhysRevLett.43.565.

[211] J. W. Rohlf, "JET PRODUCTION IN HIGH-ENERGY HADRON - PROTON COLLISIONS,". FERMILAB-THESIS-1979-20. doi:10.1016/0550-3213(80)90357-0.

[212] C. Bromberg *et al.*, "JET PRODUCTION IN HIGH-ENERGY HADRON - PROTON COLLISIONS," *Nucl. Phys.* **B171** (1980) 1. doi:10.1016/0550-3213(80)90357-0.

[213] **UA1** Collaboration, G. Arnison *et al.*, "Angular Distributions and Structure Functions from Two Jet Events at the CERN Sps p anti-p Collider," *Phys. Lett.* **B136** (1984) 294. doi:10.1016/0370-2693(84)91164-X.

[214] **UA1** Collaboration, G. Arnison *et al.*, "Angular Distributions for High Mass Jet Pairs and a Limit on the Energy Scale of Compositeness for Quarks from the CERN p anti-p Collider," *Phys. Lett.* **B177** (1986) 244. doi:10.1016/0370-2693(86)91065-8.

[215] J. Huston, "LHC Guide to Parton Distribution Functions," *ATL-PHYS-99-008* (1999).

[216] **UA1** Collaboration, G. Arnison *et al.*, "Hadronic Jet Production at the Cern Proton - Anti-Proton Collider," *Phys. Lett.* **B132** (1983) 214. doi:10.1016/0370-2693(83)90254-X.

[217] S. V. Chekanov, "Jet algorithms: A mini review," arXiv:hep-ph/0211298.

[218] G. C. Blazey *et al.*, "Run II jet physics," arXiv:hep-ex/0005012.

[219] J. M. Butterworth, J. P. Couchman, B. E. Cox, and B. M. Waugh, "KtJet: A C++ implementation of the K(T) clustering algorithm," *Comput. Phys. Commun.* **153** (2003) 85–96, arXiv:hep-ph/0210022. doi:10.1016/S0010-4655(03)00156-5.

[220] S. D. Ellis and D. E. Soper, "Successive combination jet algorithm for hadron collisions," *Phys. Rev.* **D48** (1993) 3160–3166, arXiv:hep-ph/9305266. doi:10.1103/PhysRevD.48.3160.

[221] O. Kodolova, "Jet Energy Measurements in CMS," *CMS-CR-2005-019* (2005).

[222] A. Astbury *et al.*, "A 4π solid-angle detector for the SPS used as a proton-antiproton collider at a centre-of-mass energy of 540 GeV," *CERN/SPSC* **78-06** (1978).

[223] G. Arnison *et al.*, "Experimental Observation of Isolated Large Transverse Energy Electrons With Associated Missing Energy at $\sqrt{s}$ = 540 GeV," *Phys. Lett.* **122B** (1983) 103–116.

[224] G. Arnison *et al.*, "Events With Large Missing Transverse Energy at the CERN Collider: I. W $\to \tau\nu$ Decay and Test of $\tau - \mu - e$ Universality at $Q^2 = m_{W^2}$," *Phys. Lett.* **185B** (1987) 233–240.

[225] G. Arnison *et al.*, "Events With Large Missing Transverse Energy at the CERN Collider: II. Search for the Decays of W$^\pm$ Into Heavy Leptons and of Z^0 Into Non-Interacting Particles," *Phys. Lett.* **185B** (1987) 241–248.

[226] G. Arnison *et al.*, "Events With Large Missing Transverse Energy at the CERN Collider: III. Mass Limits on Supersymmetric Particles," *Phys. Lett.* **198B** (1987) 261–270.

[227] **CDF** Collaboration, F. Abe *et al.*, "Search for gluinos and squarks at the Fermilab Tevatron collider," *Phys. Rev.* **D56** (1997) 1357–1362.

[228] F. Abe *et al.*, "Measurement of the W-boson mass," *Phys. Rev. Lett.* **65** (1990) 2243.

[229] J. Adelman *et al.*, "Determination of the jet energy scale at the Collider Detector at Fermilab," `arXiv:hep-ex/0510047`.

[230] V. F. Konoplyanikov *et al.*, "Study of the background for the 'Gamma+Jet' Process in the CMS Detector at Low Luminosity," *Phys. Part. Nucl. Lett.* **2** (2005) 45–53.

[231] **ZEUS** Collaboration, J. Breitweg *et al.*, "Measurement of jet shapes in photoproduction at HERA," *Eur. Phys. J.* **C2** (1998) 61–75, `arXiv:hep-ex/9710002`.

[232] **ALEPH** Collaboration, D. Buskulic *et al.*, "Performance of the ALEPH detector at LEP," *Nucl. Instrum. Meth.* **A360** (1995) 481–506.

[233] D. Green *et al.*, "Energy Flow Objects and Usage of Tracks for Energy Measurement in CMS," *CMS NOTE-2002/036* (2002).

[234] O. Kodolova *et al.*, "Jet Energy Correction with Charged Particle Tracks in CMS," *Eur. Phys. J.* **C40S2** (2005) 33–42.

[235] O. Kodolova, "Measurements in Very High Multiplicity Conditions," *Phys. Part. Nucl. Lett.* **35** (2004) 675–691.

[236] S. Eno, S. Dasu, W. Smith, R. Kinnunen, and A. Nikitenko, "A Study of a First and Second Level Tau Trigger," *CMS NOTE* **2000-055** (2000).

[237] D. Denegri, R. Kinnunen, and A. Nikitenko, "Study of Calorimeter Calibration with Tau's in CMS," *CMS NOTE* **1997-039** (1997).

[238] R. Kinnunen and A. Nikitenko, "Study of $H \to \tau\tau$ with Hadronic Tau Decays in CMS," *CMS NOTE* **2003-006** (2003).

[239] D. Kotlinski, A. Nikitenko, and R. Kinnunen, "Study of a Level-3 Tau Trigger with the Pixel Detector," *CMS NOTE* **2001-017** (2001).

[240] G. Bagliesi, S. Gennai, and G. Sguazzoni, "A L2 Trigger for Tau Hadronic Decays with Tracker Isolation in the Low Luminosity Scenario," *CMS NOTE* **2002-018** (2002).

[241] S. Cucciarelli, M. Konecki, D. Kotlinski, and T. Todorov, "Track-Parameter Evaluation and Primary-Vertex Finding with the Pixel Detector," *CMS NOTE* **2003-026** (2003).

[242] V. Konoplianikov, A. Ulyanov, and O. Kodolova, "Jet Calibration using Gamma+Jet Events in the CMS Detector," *CMS ANALYSIS NOTE* **2005-004** (2003).

[243] R. Kinnunen, S.Lehti, F.Moortgat, A.Nikitenko, and M.Spira, "Measurement of the $H/A \to \tau\tau$ cross section and possible constraints on $\tan\beta$.," *CMS NOTE* **2004-027** (2004).

[244] A. Rizzi and F. Palla, "Impact Parameter B Tags in CMS," *CMS Note* **FIXME: In preparation** (2005).

[245] C. Weiser, "A Combined Secondary Vertex Based B-Tagging Algorithm in CMS," *CMS Note* **FIXME: In preparation** (2005).

[246] P. D. e. a. A. Bocci, "b-Tagging in CMS Using Soft Leptons," *CMS Note* **FIXME: In preparation** (2005).

[247] S. Lowette, J. D'Hondt, J. Heyninck, and P. Vanlaer, "Offline Calibration of b–Jet Identification Efficiencies," *CMS Note* **FIXME: In preparation** (2005).

[248] O. B. e. a. J. D'Hondt, "Fitting of Event Topologies with External Kinematic Constraints in CMS," *CMS Note* **FIXME: In preparation** (2005).

[249] P. Bartalini, R. Chierici, and A. D. Roeck, "Guidelines for the Estimation of Theoretical Uncertainties at the LHC," *CMS Note* **2005/013** (2005).