CURRICULUM VITAE
Luca Pacher

Personal data and coordinates

Name	Luca PACHER
Birth date	March 24, 1987
Birth place	Torino, Italy
Citizenship	Italian
Address	via Santa Maria 37, 10085, Pont Canavese (TO), Italy
Office	New building, 2nd floor, room B27
	University of Torino, Physics Departements
	via Giuria 1, 10125, Torino, Italy
Phone	+39.011.670.7098/7340
E-mail	pacher@to.infn.it / Luca.Pacher@cern.ch

Current position and memberships

- Ph.D. student in Physics and Astrophysics at the University of Torino, XXVII cycle
- associated to Istituto Nazionale di Fisica Nucleare (INFN), Section of Torino
- member of the Italian CHIPIX65 INFN/GR5 project
- member of the RD53 collaboration, CERN
- member of the Compact Muon Solenoid (CMS) experiment at the Large Hadron Collider (LHC), CERN
- member of the CMS Torino Tracker group

Education

2011 - 2014	**Ph.D. student in Physics and Astrophysics** University of Torino, Italy Thesis: *Development of Integrated Pixel Front-End Electronics in 65nm CMOS Technology for Extreme Rate and Radiation* Final dissertation defense scheduled for February 2015
2009 - 2011	**Postgraduate degree in Physics** (2 years) University of Torino, Italy Specialization: experimental Nuclear and Particle Physics Thesis: *LePix - Monolithic Pixel Detector for LHC Tracking Systems* Final grade: 110/110 cum laude
2006 - 2009	**Undergraduate degree in Physics** (3 years) University of Torino, Italy Thesis: *Study and characterization of silicon photomultipliers for imaging applications* Final grade: 110/110 cum laude
2001 - 2006	**Scientific diploma** Liceo Scientifico Aldo Moro, Rivarolo Canavese (TO), Italy Course studies including: mathematics, physics, chemistry, Latin language, Italian and European literature, two foreign languages (English and French) Final grade: 100/100

Research activity summary

The VLSI Design Laboratory of the Torino section of INFN provides analog, digital, mixed-signal and radiation tolerant design capabilities devoted to the development of full-custom Application-Specific Integrated Circuits (ASICs) for radiation detectors in nuclear and particle physics as well as for medical applications. The design of such complex ASICs in carried out with extensive usage of professional and industry-standard computer aided design (CAD) techniques for circuit simulation and IC mask design. Since 2011, my Ph.D. research activity has been focused on the design of both analog and digital integrated circuits in a commercial 65nm CMOS technology suitable for future hybrid pixel detector Front-End ASICs. In particular, the foreseen High-Luminosity (HL) LHC operating conditions will require the installation of a new Pixel detector during the long term (aka Phase2) CMS upgrade [a]. With increased performance, the machine will deliver p-p collisions with an instantaneous luminosity beyond 3×10^{34} cm^{-2}s^{-1}, unprecedented pile-up (up to 200) and an expected integrated luminosity of 3000 fb^{-1} in 10 years. Such operating conditions introduce several challenges in the design of the new Pixel detector. The innermost layer will have to cope with unprecedented radiation levels (up to 10 MGy). Smaller pixels, of the order of 50μm $\times$ 50μm, will be required to maintain high spatial resolution and tracks separation in high pile-up conditions. The particle flux will increase to about 500 MHz/cm^2, leading to an estimated rate per pixel of the order of 100 kHz in the innermost layer. A development plan devoted to the design of a new pixel Read-Out Chip (ROC) has started. More on-chip intelligence will be introduced to deal with the increased hit rates. The expected increased trigger latency (up to 6.4 μs or higher) will require more efficient local data storage capabilities and efficient zero suppression schemes. Radiation tolerance and higher integration level constraints led to the choice of a commercial 65nm CMOS technology as the presently favoured IC fabrication technology for the design of the new chip. At present such 65nm process represents the most advanced technology node adopted to implement full-custom solutions for radiation detection and measurements in particle physics and medical applications.

In order to fully exploit the possibilities offered by a very-deep submicron technology, most of the signal processing will be performed into the digital domain. However, the usage of thinner sensors to increase the radiation tolerance determines very low signal, needing very low-noise and low-threshold (of about 1000 e^-) performance for the analog front-end. Different approaches for both the analog signal processing (pre-amplification and shaping) and the charge digitization (time-over-threshold techniques, local/shared ADCs) are under consideration.
Design activities, technology qualification and radiation hardness studies using such a 65nm CMOS technology are now part of the international RD53 collaboration research program officially supported by CERN, that involves both ATLAS and CMS pixel ASIC communities as well as other non-LHC experiments and groups interested in designing in 65nm [b]. Furthermore, Italian CMS and ATLAS groups have submitted in July 2013 a detailed proposal to INFN CSN5 to finance a new three-years research program on CMOS 65nm, leading to the approval of the CHIPIX65 project.

My first experience with silicon pixel detectors and analog IC design began during the research work for my postgraduate degree thesis in Physics, within the context of the LePix project. LePix explored the possibility of implementing *monolithic* pixel detectors in a commercial 90nm CMOS technology, offering a novel pixel architecture potentially suitable for the LHC upgrades and for future particle physics experiments. According to the monolithic approach, the sensor and the front-end electronics were integrated on the same silicon wafer. However, in a different way with respect to traditional monolithic sensors, in which the charge collection is driven by diffusion, the LePix key feature was the charge collection by drift, improving both speed and radiation tolerance [c]. Within the LePix framework, the Torino section of INFN has given contributions in both the design of pixel analog Front-End electronics and in the electrical characterizations and measurements on first test pixel matrices.
In particular, during my thesis period I gave contributions in the commissioning of the test setup and in the implementation of the software for systematic off-line data analysis and comparison with CAD circuit simulations.

As a component of the CMS Torino Tracker group, I contributed to off-line shifts at CERN for the CMS Tracker Data Quality Monitoring (DQM) activities during the 2011-2012 LHC Physics runs.

Skills and interests

Computing and operating systems
GNU/Linux (RHEL/Scientifc Linux 6.x) and Sun Solaris operating systems. UNIX system administration: disk management (RAID/LVM), account management, X System, TCP/IP networking, OpenSSH configuration, NFS/iptables setup, project versioning (CVS/SVN), backups. System administration and support for CMS/CHIPIX65 design activities in Torino.

CAD softwares
EDA tools installation and maintenance (Cadence, Mentor Graphics, Synopsis, Altera, Xilinx). UNIX environment setup and tools usage, bug fixing. FLEXlm-based license management.
Process design kit and IP libraries installation and maintenance, design-flow test, technology and models usage, design data and physical verification rule decks setup, OpenAccess and libraries setup, LEF to OpenAccess conversion, documentation and technical writing. Experience with 130nm, 90nm, 110nm and 65nm process technologies.

Analog IC design
Design, simulation and layout of fundamental analog blocks of a Front-End system for radiation detection. Implementation of low-noise and low-power charge sensitive amplifiers (CSA) and shapers, continuous-time feedback circuits and leakage compensation circuits. Design of continuous-time and track-and-latch voltage comparators, usage of high-precision offset compensation techniques (autozeroing). Implementation of current-steering D/A converters for local threshold adjustment.
Design experience in weak/moderate/strong inversion regions, definition of specifications and constraints, design of analog blocks with minimal area and lowest possible power dissipation and noise.
Extensive knowledge of the unified front-to-back Cadence IC6.x (Virtuoso) design environment and its tool chain. SKILL scripting for task automation. Circuit design with schematic entry and behavioural modelling (Verilog-A), basic transistor level simulations (SPICE/Spectre), advanced simulations (parametric analysis, MonteCarlo and corner analysis, design centering and yield optimization), batch-mode simulations (SKILL/OCEAN environment).
Physical implementation and mask design: full-custom layout editing, semi-automated layout (schematic-driven, design rule-driven and constraints-driven layout).
Layout verification: DRC, LVS and parasitic extraction, post-layout simulations (Cadence Assura Physical Verification/QRC, PVS, Mentor Calibre nmDRC/nmLVS and RCX, SVRF)

Digital and mixed-signal IC design
HDL-based (Verilog/VHDL) RTL digital design, testbech simulation (Cadence Incisive, MoldeSim, Xilinx ISim). Synthesis: libraries setup, design import and elaboration, STA/SSTA, SDC constraints, technology mapping and advanced synthesis options (low power, DFT and physical synthesis).
Standard-cell based block-level digital physical implementation using automated place-and-route (PNR) tools: floorplanning, power planning, placement, CTS, routing, DFM, optimization, design verification.
Extensive knowledge of Cadence digital tools (RTL Compiler, Encounter Digital Implementation System) for the digital implementation flow, Tcl/Tk and Makefile scripting for design-flow automation.
Sign-off and design finishing: formal equivalence checking (Cadence Conformal), signoff STA, signal integrity verification (Cadence ETS) and power analysis (Cadence EPS), gate-level simulation with SDF back-annotation (Cadence Incisive environment).
Mixed-signal design and simulation (AMS environment). Design experience with SAR A/D converters, asynchronous logic design.
Design exchange between analog and digital environments, LEF/DEF import and export, GDSII stream generation.

Chip assembling and sign-off
Usage and configuration of analog and digital I/O cells, netlist-based (Cadence Encounter) or custom (Cadence IC6.x) pad-frame design, analog-on-top (AoT) final chip assembling, bond pads placement, ESD protection design and placement. Design finishing and sign-off checks, full-chip DRC, antenna and density rules fixing. Final design export (GDSII) and sign-off LVL. Foundry transfer.

Software programming and scripting
C/C++, Python, Tcl/Tk, csh/tcsh and bash, ROOT/PyROOT, Cadence SKILL/OCEAN.
Web design (HTML/XML, TWiki/DokuWiki)

Languages

Italian (mother tongue), **English** (fluent), **French** (basic)

International schools and courses

Introduction to Analogue and Mixed Signal IC Design
Rutherford Appleton Laboratory (RAL), STFC, Didcot, UK, Jun 30 - Jul 4, 2014

Comprehensive Digital IC Implementation and Signoff using Cadence tools
Rutherford Appleton Laboratory (RAL), STFC, Didcot, UK, Mar 31 - Apr 5, 2014

DATA driven Front-End Electronics for time and energy measurement with highly segmented detector
Torino, Italy, Nov 25-27, 2013

XXIII Giornate di Studio sui Rivelatori
Torino, Italy, Oct 22-25, 2013

Low-Power Analog IC Design
Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, Jul 1-5, 2013

XXII Giornate di Studio sui Rivelatori
Torino, Italy, Jun 4-7, 2012

CMS Data Analysis School (DAS)
Pisa, Italy, Jan 23-27, 2012

Conferences and workshops

First RD53 Collaboration Meeting
CERN, Apr 10-11, 2014
https://indico.cern.ch/event/296570/

International workshop on real time, self triggered Front-End Electronics for multichannel detectors
Torino, Italy, Nov 27-28, 2013

Workshop su elettronica VLSI nell'INFN
Padova, Italy, Nov 13, 2013
https://agenda.infn.it/conferenceDisplay.py?confId=7036

XCIX Congresso Nazionale Societa' Italiana di Fisica
Trieste, Italy, Sep 27, 2013
Talk: ***A new pixel readout chip for long term CMS upgrades***
http://www.sif.it/attivita/congresso/xcix

ATLAS and CMS 65nm pixel ASIC meeting
CERN, Nov 26-27, 2012
https://indico.cern.ch/conferenceDisplay.py?confId=208595

CMS Tracker Italian Workshop
Perugia, Italy, March 26-27, 2012
https://indico.cern.ch/conferenceDisplay.py?confId=180235

INFN KickOff Meeting on New Pixel Chip
Torino, Italy, Jun 1, 2011
https://indico.cern.ch/conferenceDisplay.py?confId=140170

Publications

Publications with personal contributions

[a] *CMS Technical Design Report for the Pixel Detector Upgrade*
CERN-LHCC-2012-016, CMS-TDR-11
https://cds.cern.ch/record/1481838

[b] *RD Collaboration Proposal: Development of Pixel Readout Integrated Circuits fo Extreme Rate and Radiation*
CERN-LHCC-2013-008, LHCC-P-006
http://cds.cern.ch/record/1553467

[c] *Radiation Tolerance of a Moderate Resistivity Substrate in Modern CMOS Process*
Nuclear Instruments and Methods in Physics Research (NIM) A, vol. 718 (2013), pp. 347-349
http://inspirehep.net/record/1251132

Contributions to collaboration meetings and internal documents

First RD53 Collaboration Meeting
CERN, Apr 10, 2014
Status report on CHIPIX65 collaboration 65nm design activities for pixel analog Front-End Electronics

First CHIPIX65 collaboration meeting
Padova, Italy, Nov 14, 2013

Phase2 Pixel electronics meeting during CMS Tracker Week
CERN, Aug 27, 2013
Status report on Torino 65nm design activities

Phase2 Pixel electronics meeting during CMS Tracker Week
CERN, May 14, 2013
Status report on Torino 65nm design activities

Phase2 Pixel electronics meeting during CMS Tracker Week
CERN, Feb 7, 2013
Status report on Torino 65nm design activities

Workshop on CMS pixel chip development
Torino, Italy, May 21-23, 2012

Authorship within the CMS Collaboration

1. *Search for standard model production of four top quarks in the lepton + jets channel at* $\sqrt{s} = 8$ TeV
   CMS-TOP-13-012, CERN-PH-EP-2014-222
2. *Measurement of the production cross section ratio* $\sigma(\chi_{2b}1P)/\sigma(\chi_{1b}1P)$ *at* $\sqrt{s} = 8$ TeV
   CMS-B2G-12-024, CERN-PH-EP-2014-219
3. *Search for displaced supersimmetry in events with an electron and a muon with large impact parameters*
   CMS-B2G-12-024, CERN-PH-EP-2014-219
4. *Long-range two-particle correlations of strange hadrons with charged particles in pPb and PbPb collisions at LHC energies*
   CMS-HIN-14-002, CERN-PH-EP-2014-212
5. *Searches for electroweak neutralino and chargino production in channels with Higgs, Z, and W bosons in pp collisions at 8 TeV*
   CMS-SUS-14-002, CERN-PH-EP-2014-216
6. *Search for dark matter, extra dimensions, and unparticles in monojet events in proton-proton collisions at* $\sqrt{s} = 8$ TeV
   CMS-EXO-12-048, CERN-PH-EP-2014-164
7. *Search for neutral MSSM Higgs bosons decaying to a pair of tau leptons in pp collisions*
   CMS-HIG-13-021, CERN-PH-EP-2014-192
8. *Measurements of jet multiplicity and differential production cross sections of Z+jets events in proton-proton collisions at* $\sqrt{s} = 7$ TeV
   CMS-SMP-12-017, CERN-PH-EP-2014-205
9. *Search for physics beyond the standard model in final states with a lepton and missing transverse energy in proton-proton collisions at* $\sqrt{s} = 8$ TeV
   CMS-EXO-12-060, CERN-PH-EP-2014-176
10. *Search for the associated production of the Higgs boson with a top-quark pair*
    JHEP 1409 (2014) 087, CMS-HIG-13-029, CERN-PH-EP-2014-189
11. *Search for pair production of third-generation scalar leptoquarks and top squarks in proton-proton collisions at* $\sqrt{s} = 8$ TeV
    CMS-EXO-12-032, CERN-PH-EP-2014-190
12. *Measurement of the* $t\bar{t}$ *production cross section in pp collisions at* $\sqrt{s} = 8$ TeV *in dilepton final states containing one* τ *lepton*
    CERN-PH-EP-2014-167, CMS-TOP-12-026
13. *Search for heavy neutrinos and W bosons with right-handed couplings in proton-proton collisions at* $\sqrt{s} = 8$ TeV
    CMS-EXO-13-008, CERN-PH-EP-2014-161
14. *Search for new resonances decaying via WZ to leptons in proton-proton collisions at* $\sqrt{s} = 8$ TeV
    CMS-EXO-12-025, CERN-PH-EP-2014-160
15. *Study of hadronic event-shape variables in multijet final states in pp collisions at* $\sqrt{s} = 7$ TeV
    CMS-SMP-12-022, CERN-PH-EP-2014-146
16. *Observation of the diphoton decay of the Higgs boson and measurement of its properties*
    CMS-HIG-13-001, CERN-PH-EP-2014-117
17. *Measurement of top quark-antiquark pair production in association with a W or Z boson in pp collisions at* $\sqrt{s} = 8$ TeV
    Eur.Phys.J. C74 (2014) 3060, CMS-TOP-12-036, CERN-PH-EP-2014-136
18. *Differential cross section measurements for the production of a W boson in association with jets in proton-proton collisions at* $\sqrt{s} = 7$ TeV

CMS-SMP-12-023, CERN-PH-EP-2014-134

19. *Search for excited quarks in the γ+jet final state in proton-proton collisions at $\sqrt{s} = 8$ TeV*
CMS-EXO-13-003, CERN-PH-EP-2014-129

20. *Measurement of jet fragmentation in PbPb and pp collisions at $\sqrt{s_{NN}} = 2.76$ TeV*
Phys.Rev. C90 (2014) 024908, CMS-HIN-12-013, CERN-PH-EP-2014-100

21. *Measurement of prompt J/ψ pair production in pp collisions at $\sqrt{s} = 7$ TeV*
JHEP 1409 (2014) 094, CMS-BPH-11-021, CERN-PH-EP-2014-111

22. *Measurement of the ratio of inclusive jet cross sections using the anti-k_T algorithm with radius parameters R=0.5 and 0.7 in pp collisions at $\sqrt{s} = 7$ TeV*
CMS-SMP-13-002, CERN-PH-EP-2014-068

23. *Measurement of the pp to ZZ production cross section and constraints on anomalous triple gauge couplings in four-lepton final states at $\sqrt{s} = 8$ TeV*
CMS-SMP-13-005, CERN-PH-EP-2014-080

24. *Search for jet extinction in the inclusive jet-pt spectrum from proton-proton collisions at $\sqrt{s} = 8$ TeV*
Phys.Rev. D90 (2014) 032005, CMS-EXO-12-051, CERN-PH-EP-2014-108

25. *Searches for electroweak production of charginos, neutralinos, and sleptons decaying to leptons and W, Z, and Higgs bosons in pp collisions at 8 TeV*
Eur.Phys.J. C74 (2014) 9, 3036, CMS-SUS-13-006, CERN-PH-EP-2014-098

26. *Measurement of differential cross sections for the production of a pair of isolated photons in pp collisions at $\sqrt{s} = 7$ TeV*
CMS-SMP-13-001, CERN-PH-EP-2014-067

27. *Description and performance of track and primary-vertex reconstruction with the CMS tracker*
CMS-TRK-11-001, CERN-PH-EP-2014-070

28. *Search for supersymmetry with razor variables in pp collisions at $\sqrt{s} = 7$ TeV*
CMS-SUS-12-005, CERN-PH-EP-2014-057

29. *Search for top-squark pairs decaying into Higgs or Z bosons in pp collisions at $\sqrt{s} = 8$ TeV*
Phys.Lett. B736 (2014) 371, CMS-SUS-13-024, CERN-PH-EP-2014-073

30. *Constraints on the Higgs boson width from off-shell production and decay to Z-boson pairs*
Phys.Lett. B736 (2014) 64, CMS-HIG-14-002, CERN-PH-EP-2014-078

31. *Search for massive resonances decaying into pairs of boosted bosons in semi-leptonic final states at $\sqrt{s} = 8$ TeV*
JHEP 1408 (2014) 174, CMS-EXO-13-009, CERN-PH-EP-2014-076

32. *Search for massive resonances in dijet systems containing jets tagged as W or Z boson decays in pp collisions at $\sqrt{s} = 8$ TeV*
JHEP 1408 (2014) 173, CMS-EXO-12-024, CERN-PH-EP-2014-071

33. *Measurement of pseudorapidity distributions of charged particles in proton-proton collisions at $\sqrt{s} = 8$ TeV by the CMS and TOTEM experiments*
CMS-FSQ-12-026, CERN-PH-EP-TOTEM-2014-002, CERN-PH-EP-2014-063

34. *Search for anomalous production of events with three or more leptons in pp collisions at $\sqrt{s} = 8$ TeV*
Phys.Rev. D90 (2014) 032006, CMS-SUS-13-002, CERN-PH-EP-2014-039

35. *A search for WW gamma and WZ gamma production and constraints on anomalous quartic gauge couplings in pp collisions at $\sqrt{s} = 8$ TeV*
Phys.Rev. D90 (2014) 032008, CMS-SMP-13-009, CERN-PH-EP-2014-046

36. *Measurement of jet multiplicity distributions in t t-bar production in pp collisions at $\sqrt{s} = 7$ TeV*
Eur.Phys.J. C74 (2014) 3014, CMS-TOP-12-018, CERN-PH-EP-2014-048

37. *Measurement of the ratio $B(t \to Wb)/B(t \to Wq)$ in pp collisions at $\sqrt{s} = 8$ TeV*
Phys.Lett. B736 (2014) 33, CMS-TOP-12-035, CERN-PH-EP-2014-052

38. *Search for invisible decays of Higgs bosons in the vector boson fusion and associated ZH production modes*
Eur.Phys.J. C74 (2014) 2980, CMS-HIG-13-030, CERN-PH-EP-2014-051

39. *Measurement of the t-channel single-top-quark production cross section and of the $|V_{tb}|$ CKM matrix element in pp collisions at $\sqrt{s} = 8$ TeV*
JHEP 1406 (2014) 090, CMS-TOP-12-038, CERN-PH-EP-2014-032

40. *Measurement of WZ and ZZ production in pp collisions at $\sqrt{s} = 8$ TeV in final states with b-tagged jets*
Eur.Phys.J. C74 (2014) 2973, CMS-SMP-13-011, CERN-PH-EP-2014-022

41. *Alignment of the CMS tracker with LHC and cosmic ray data*
JINST 9 (2014) P06009, CMS-TRK-11-002, CERN-PH-EP-2014-028

42. *Search for new physics in the multijet and missing transverse momentum final state in proton-proton collisions at $\sqrt{s} = 8$ TeV*
JHEP 1406 (2014) 055, CMS-SUS-13-012, CERN-PH-EP-2014-015

43. *Measurements of the $t\bar{t}$ charge asymmetry using the dilepton decay channel in pp collisions at $\sqrt{s} = 7$ TeV*
JHEP 1404 (2014) 191, CMS-TOP-12-010, CERN-PH-EP-2014-010

44. *Search for $W' \to tb$ decays in the lepton + jets final state in pp collisions at $\sqrt{s} = 8$ TeV*
JHEP 1405 (2014) 108, CMS-B2G-12-010, CERN-PH-EP-2014-011

45. *Evidence for the direct decay of the 125 GeV Higgs boson to fermions*
Nature Phys. 10 (2014), CMS-HIG-13-033, CERN-PH-EP-2014-004

46. *Evidence for the* 125 GeV *Higgs boson decaying to a pair of τ leptons*
JHEP 1405 (2014) 104, CMS-HIG-13-004, CERN-PH-EP-2014-001

47. *Studies of dijet transverse momentum balance and pseudorapidity distributions in pPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV*
Eur.Phys.J. C74 (2014) 2951, CMS-HIN-13-001, CERN-PH-EP-2013-236

48. *Observation of the associated production of a single top quark and a W boson in pp collisions at $\sqrt{s} = 8$ TeV*
Phys.Rev.Lett. 112 (2014) 231802, CMS-TOP-12-040, CERN-PH-EP-2013-237

49. *Measurement of the $t\bar{t}$ production cross section in the dilepton channel in pp collisions at $\sqrt{s} = 8$ TeV*
JHEP 1402 (2014) 024, CMS-TOP-12-007, CERN-PH-EP-2013-234

50. *Measurement of the production cross section for a W boson and two b jets in pp collisions at $\sqrt{s} = 7$ TeV*
Phys.Lett. B735 (2014) 204, CMS-SMP-12-026, CERN-PH-EP-2013-223, CERN-PH-EP-2013-2223

51. *Measurement of four-jet production in proton-proton collisions at $\sqrt{s} = 7$ TeV*
Phys.Rev. D89 (2014) 092010, CMS-FSQ-12-013, CERN-PH-EP-2013-229

52. *Event activity dependence of Y(nS) production in $\sqrt{s_{NN}} = 5.02$ TeV pPB and $\sqrt{s} = 2.76$ TeV pp collisions*
JHEP 1404 (2014) 103, CMS-HIN-13-003, CERN-PH-EP-2013-219

53. *Measurement of the muon charge asymmetry in inclusive pp to WX production at $\sqrt{s} = 7$ TeV and an improved determination of light parton distribution functions*
Phys.Rev. D90 (2014) 032004, CMS-SMP-12-021, CERN-PH-EP-2013-232

54. *Study of double parton scattering using W + 2-jet events in proton-proton collisions at $\sqrt{s} = 7$ TeV*
JHEP 1403 (2014) 032, CMS-FSQ-12-028, CERN-PH-EP-2013-224

55. *Measurement of the properties of a Higgs boson in the four-lepton final state*
Phys.Rev. D89 (2014) 092007, CMS-HIG-13-002, CERN-PH-EP-2013-220

56. *Evidence of b-jet quenching in PbPb collisions at $\sqrt{s_{NN}} = 2.76$ TeV*
Phys.Rev.Lett. 113 (2014) 132301, CMS-HIN-12-003, CERN-PH-EP-2013-228

57. *Search for flavor-changing neutral currents in top-quark decays t to Zq in pp collisions at $\sqrt{s} = 8$ TeV*
Phys.Rev.Lett. 112 (2014) 171802, CMS-TOP-12-037, CERN-PH-EP-2013-208

58. *Search for top squark and higgsino production using diphoton Higgs boson decays*
Phys.Rev.Lett. 112 (2014) 161802, CMS-SUS-13-014, CERN-PH-EP-2013-226

59. *Search for top-quark partners with charge 5/3 in the same-sign dilepton final state*
Phys.Rev.Lett. 112 (2014) 171801, CMS-B2G-12-012, CERN-PH-EP-2013-216

60. *Studies of azimuthal dihadron correlations in ultra-central PbPb collisions at* $\sqrt{s_{NN}} = 2.76$ TeV
JHEP 1402 (2014) 088, CMS-HIN-12-011, CERN-PH-EP-2013-214

61. *Measurement of Higgs boson production and properties in the WW decay channel with leptonic final states*
JHEP 1401 (2014) 096, CMS-HIG-13-023, CERN-PH-EP-2013-221

62. *Inclusive search for a vector-like T quark with charge 2/3 in pp collisions at* $\sqrt{s} = 8$ TeV
Phys.Lett. B729 (2014) 149-171, CMS-B2G-12-015, CERN-PH-EP-2013-215

63. *Search for new physics in events with same-sign dileptons and jets in pp collisions at* $\sqrt{s} = 8$ TeV
JHEP 1401 (2014) 163, CERN-PH-EP-2013-213

64. *Search for supersymmetry in pp collisions at* $\sqrt{s} = 8$ TeV *in events with a single lepton, large jet multiplicity, and multiple b jets*
Phys.Lett. B733 (2014) 328-353, CMS-SUS-13-007, CERN-PH-EP-2013-209

65. *Measurements of* $t\bar{t}$ *spin correlations and top-quark polarization using dilepton final states in pp collisions at* $\sqrt{s} = 7$ TeV
Phys.Rev.Lett. 112 (2014) 182001, CMS-TOP-13-003, CERN-PH-EP-2013-211

66. *Searches for light- and heavy-flavour three-jet resonances in pp collisions at* $\sqrt{s} = 7$ TeV
Phys.Lett. B730 (2014) 193-214, CMS-EXO-12-049, CERN-PH-EP-2013-204

67. *Measurement of higher-order harmonic azimuthal anisotropy in PbPb collisions at* $\sqrt{s_{NN}} = 2.76$ TeV
Phys.Rev. C89 (2014) 044906, CMS-HIN-11-005, CERN-PH-EP-2013-196

Torino, Oct 2, 2014

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