Fermilab Publications and Talks

2009 – 2012

Sensors and Electronics Thrust

3D ASICs

- "Monolithic active pixel matrix with binary counters (MAMBO III) ASIC.", F. Khalid et al, PoS VERTEX2010 (2010) 029, FERMILAB-PUB-10-580-PPD.
- "Vertically Integrated Circuits at Fermilab", Grzegorz Deptuch et al, IEEE Trans.Nucl.Sci. 57 (2010) 2178-2186
- "3D design activities at Fermilab: Opportunities for physics" , R. Yarema et al, in Nucl.Instrum.Meth. A617 (2010) 375-377.
- "The via revolution.", R. Yarema, in PoS VERTEX2010 (2010) 035
- "Demonstration of fine pitch FCOB (Flip Chip on Board) assembly based on solder bumps at Fermilab." M. Trimpl et al. FERMILAB-TM-2447-E-PPD. Nov 2009. 4 pp. Published in JINST 4 (2009) T11001
- "Pixel Detectors in 3D Technologies for High Energy Physics", G. Deptuch et al, IEEE 3D Systems Integration Conference (3DIC), Munich, Germany, 2010, pp. 1-4.
- "VIPIC IC - Design and test aspects of the 3D pixel chip", G. Deputch et al, 2010 IEEE Nuclear Science Symposium Conference Record, Orlando, FL, USA, 2010, pp.1540-1543.
- "Vertically integrated pixel readout chip for high energy physics." Grzegorz Deptuch FERMILAB-CONF-11-020-PPD. Jan 2011. 4 pp., Presented at Conference: C11-03-21.1
- "Monolithic Active Pixel Matrix with Binary Counters (MAMBO) ASIC", F. Khalid, et al FERMILAB-CONF-10-478-PPD. Nov 2010. 7 pp.
- "Pixel detectors in 3D technologies for high energy physics" G. Deptuch, et al , FERMILAB-CONF-10-401-PPD. Oct 2010. 4 pp.
- "Proposal for the development of 3D Vertically Integrated Pattern Recognition Associative Memory (VIPRAM).", Gregory Deptuch et al FERMILAB-TM-2482-E-PPD. Oct 2010. 57 pp.
- "3D detector and electronics integration technologies: Applications to ILC, SLHC, and beyond.", R.Lipton, Nucl. Instrum. Meth. A 636, S160 (2011).
- "3D Technology for intelligent trackers," R. Lipton, JINST 5, C10006 (2010).
- "A vertically integrated pixel readout device for the Vertex Detector at the International Linear Collider," G. Deptuch et al. , IEEE Trans. Nucl. Sci. 57, 880.
- "Development of Vertically Integrated Circuits for ILC Vertex Detectors," R. Lipton [Linear Collider Collaboration], arXiv:0901.4741 [physics.ins-det].
- "Architecture of a level 1 track trigger for the CMS experiment". E. Hazen et. al.,

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Monolithic SOI

- "Developments of SOI monolithic pixel detectors", Y. Arai et al, Nucl.Instrum.Meth. A623 (2010) 186-188."
- "Monolithic pixel detectors in a deep submicron SOI process.", G. Deptuch, Nucl.Instrum.Meth. A623 (2010) 183-185.
- "Noise behavior of a 180-nm CMOS SOI technology for detector front-end electronics.", Rad Hard Vertex Detector R&D - Pixels Collaboration, FERMILAB-PUB-08-594-PPD. 2008. 6 pp. Published in IEEE Trans.Nucl.Sci. 55 (2008) 2408-2413
- "SOI detector with drift field due to majority carrier flow - an alternative to biasing in depletion", M. Trimpl et al, FERMILAB-CONF-10-475-E-PPD. Nov 2010. 7 pp.

Test of sensors in Extreme Radiation Environment

- "Electrical characterization and preliminary beam test results of 3D silicon CMS pixel detector", O.Koybasi et al., , IEEE, Trans. Nucl. Sci. 58(2011) 1315-1323
- "Design, simulation, fabrication, and preliminary tests of 3D CMS pixel detectors for the super LHC", O. Koybasi et al., IEEE Trans. Nucl. Sci. 57(2010) 2897-2905
- "Simulation an Laboratory test results of 3D CMS pixel detectors for HL-LHC", E. Alagoz et al. Submitted to JINST (2012).
- "Test-beam studies of diamond sensors for SLHC", Lorenzo Uplgger et al. ELBA 2012.
- "Test of single crystal diamond pixel detector", S. Kwan, RD42 collaboration meeting CERN, April 2010

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- "Development of an alkali transfer photocathode for large area microchannel plate-based photodetector.", Z. Yusof et al, TIPP 2011-Technology and Instrumentation in Particle Physics, 2011 Physics Procedia
- "Photodetector timing research at Fermilab", E. Ramberg et al, Acta Physica Polonica B (2010) Volume: 4, Issue: 1, Pages: 29-34

Fast Timing

- "Test of timing properties of silicon photomultiplier", A.Ronzhin et al, NIM, A616, 2010, 38-44..
- "Development of a 10 ps level time of flight system in the Fermilab Test beam facility", A.Ronzhin et al, NIM, A623, 2010, 931-941.
- "Waveform digitization for high resolution timing detectors with silicon photomultipliers", A.Ronzhin et al, NIM, A668, 2012, 94-97.

- "Waveform analysis of SiPM signals with DRS4 board", A.Ronzhin et al,TIPP 2011 - Technology and Instrumentation in Particle Physics, 2011 Physics Procedia (2012) 1–3., www.elsevier.com/locate/procedia
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- "Test of timing properties of the Photek 240 PMT", A. Ronzhin et al, FERMILAB-TM-2456-E (2010)
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- "FPHX: A New Silicon Strip Readout Chip for the PHENIX Experiment at RHIC.", PHENIX Collaboration, FERMILAB-CONF-09-564-PPD. 2009. 5 pp.
- "Enhanced blue-light sensitivity P on N Silicon Photomultipliers", Mazzillo, M, Proc. IEEE Nuclear Science Symp. Conf. Rec., 2011, pp. 538-543.
- "Analysis of Full Charge Reconstruction Algorithms for X-ray Pixelated Detectors", A.Baumbaugh et al, 2011 IEEE Nuclear Science Symposium Conference Record, Valencia, Spain, 2011, pp.660-667
- "Analysis of Full Charge Reconstruction Algorithms for X-ray Pixelated Detectors", A.Baumbaugh et al.,IEEE Nuclear Science Symposium Conference Record , pp.660-667 (2011).
- "Vertex Detector R&D Status", R. Lipton, Report to the International Detector Advisory Group, International Workshop on Linear Colliders 2010, Geneva, Switzerland, October 20, (2010).
- "SiD VXD and tracking", M. Demarteau, LCWS 2010 International Linear Collider Workshop (2010).

Systems Thrust

Liquid Argon

- "Cold electronics for 'Giant' Liquid Argon Time Projection Chambers", Veljko Radeka et al, J.Phys.Conf.Ser. 308 (2011) 012021.
- "Lifetime Studies of 130nm nMOS Transistors Intended for Long-Duration Cryogenic High-Energy Physics Experiments", J.Hoff, 2011 IEEE Nuclear Science Symposium Conference Record, Valencia, Spain, 2011, pp.685-693
- "First Measurements of Inclusive Muon Neutrino Charged Current Differential Cross Sections on Argon.", ArgoNeuT Collaboration (C. Anderson (Yale U.) et al.) Phys.Rev.Lett. 108 (2012) 161802
- "Analysis of a Large Sample of Neutrino-Induced Muons with the ArgoNeuT Detector", ArgoNeuT Collaboration (C. Anderson (Yale U.) et al.) arXiv:1205.6702
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- "Light Yield in DarkSide-10: a Prototype Two-phase Liquid Argon TPC for Dark Matter Searches", D. Akimov et al., arXiv:1204.6218
- "First Commissioning of a Cryogenic Distillation Column for Low Radioactivity Underground Argon" H. Back et al., arXiv:1204.6061
- "A Study of the Residual 39Ar Content in Argon from Underground Sources", J.Xu et al., arXiv:1204.6061
- "A system to test the effects of materials on the electron drift lifetime in liquid argon and observations on the effect of water. " R. Andrews, et al., Nucl.Instrum.Meth. A608 (2009) 251-258
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- "Probes of fundamental physics using intense photon beams." Aaron S. Chou, TIPP 2011, Chicago, IL, June 9, 2011.

Chameleon Afterglow detector

- "On the anomalous afterglow seen in a chameleon afterglow search", Steffen, J.H., et al. submitted to PRD, arXiv1205.6495, (2012)
- "Designing dark energy afterglow experiments", Upadhye, A., et al. submitted to PRD, arXiv1204.5476 (2012)
- "Laboratory Constraints on Chameleon Dark Energy and Power-Law Fields", Steffen, J.H., et al. PRL, 105, 1803 (2012) arXiv:1010.0988

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- "Beam tests of directly coupled scintillator tiles with MPPC readout", F. Aby-Ajamieh et al, Nucl.Instrum.Meth. A659 (2011) 348-354
- "Directly coupled tiles as elements of a scintillator calorimeter with MPPC readout, Blazey et al, Nucl.Instrum.Meth. A605 (2009) 277-281.
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- "Measurement of Positron Showers with a Digital Hadron Calorimeter", B.Bilki et al., arXiv:0902.1699 [physics.ins-det]. 2009 JINST 4 P04006.
- "Measurement of the Rate Capability of Resistive Plate Chambers", B.Bilki et al., arXiv:0901.4371 [physics.ins-det]. 2009 JINST 4 P06003.
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Bubble Chamber

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- "Improved Limits on Spin-Dependent WIMP-Proton Interactions from a Two Liter CF_3I Bubble Chamber," E.Behnke et al., Phys.Rev.Lett 106, 021303 (2011)

Other

- "Silicon Photomultiplier Choice for the Scintillating Fiber Tracker in Second Generation Proton Computed Tomography Scanner", A. Ronzhin et al, Fermilab TM-2534-E, May 2012.
- "The Fermilab Large Cold Blackbody Test Stand for CMB R&D", Donna Kubik et al., TIPP 2011 - Technology and Instrumentation in Particle Physics, 2011 Physics Procedia (2012) 1–3
- "Architecture of a Silicon Strip Beam Position Monitor", R. Angstadt et. al. . Oct 2010. 5 pp. JINST 5 (2010) C12039
- "Vertex Detector and Silicon Tracker Power and Cabling Considerations", W. Cooper, ALCPG 2011 (2011).
- "SiD Vertex Detector Mechanics", W. Cooper, CLIC Working group 4 (2010).

DAQ & Computing Thrust

QIE10

- "Progress on the Upgrade of the CMS Hadron Calorimeter Front-End Electronics," Anderson, J., Whitmore, J., Freeman, J. (FNAL) for the CMS Collaboration, TIPP 2011-Technology and Instrumentation in Particle Physics, 2011 Physics Procedia
- "Developments for the upgrade of the CMS HCAL front-end electronics.", D. Baden et al, JINST 5 (2010) C11005.

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- "Sub-electron readout noise in a Skipper CCD fabricated on high resistivity silicon", G. Moroni et al, Experimental Astronomy 2012 .
- "Direct search for low mass dark matter particles with CCDs", DAMIC Collaboration, Physics Letters B, Volume 711, Issue 3, p. 264-269. (2012)
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- "CCD testing for DECam (Dark Energy Survey Camera)", Donna Kubik et al., TIPP 2011 - Technology and Instrumentation in Particle Physics, 2011 Physics Procedia (2012) 1–3

CAPTAN

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- "Real-Time Event Reconstruction Using the CAPTAN System Embedded in the Micro TCA Framework.", R. Rivera, IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS-MIC), 2010.
- "A generic readout environment for prototype pixel detectors", Marcos Turqueti, Ryan Rivera, Alan Prosser, Simon Kwan;, Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Volume 623, Issue 1, 1 November 2010, Pages 531-533.
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Muon Collider Detector Simulation

- "Towards a compensatable Muon Collider calorimeter with manageable backgrounds", R. Raja. Apr 2012. 55 pp. Published in JINST 7 (2012) P04010.
- "Muon Collider: Plans, Progress and Challenges", R. Lipton, Talk given at the August 2011 Meeting of the Division of Particles and Fields of the American Physical Society, Brown University, Providence, Rhode Island. arXiv:1204.3538.
- "Muon Collider Physics and Detectors", R. Lipton, Special Seminar, Fermilab, February 24, (2011).
- "New Detectors for Muon Collider", R. Lipton, Muon Collider 2011, June 28, 2011.
- "ILCroot tracker and vertex detector response to MARS simulation of the beam background in the muon collider", N. Terentev , TIPP 2011 - Technology and Instrumentation in Particle Physics, 2011 Physics Procedia (2012)
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