

CURRICULUM VITAE
IRAKLI CHAKABERIA

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EDUCATION

2006 - 2014 Ph.D, Kansas State University, Dept. of Physics, High Energy Physics, Manhattan, KS

2002 - 2004 M.S., Tbilisi State University, Department of Physics, Solid State Physics, Tbilisi, Georgia

1998 - 2002 B.S., Tbilisi State University, Department of Physics, Tbilisi, Georgia

1998 T.Gegelia's Physico-Mathematical School of Tbilisi State University, Tbilisi, Georgia

PROFESSIONAL EXPERIENSE

2014 - present Research Associate - Brookhaven National Laboratory

- **STAR experiment:**

- Physics data analysis
- Upgrade project for inner time projection chamber

2008 - 2014 Graduate Research Assistant - Kansas State University, High Energy Physics

- **CMS experiment:** di-boson production research with $V\gamma$ group

- Contributed to the analysis code development for data selection and cross-check for all four channels ($\mu\mu\gamma/ee\gamma/\mu\nu\gamma/e\nu\gamma$)
- In the scope of analysis, checked consistency of Monte Carlo generators used for the analysis using full kinematic information of final state and confirming the consistency of angular distributions

- **PhD thesis:** Study of Helicity Distribution of the $Z\gamma$ Production at the CMS

Key aspects:

- Theoretical calculation of angular distribution of final state particles ($\mu\mu\gamma/ee\gamma$)
- Simplification of the distribution function with theoretically and experimentally motivated constraints
- Measurement of helicity amplitudes using unbinned likelihood method
- Generation and study of simulated data using various Monte Carlo simulators (BAUR, MadGraph, Sherpa, MCFM)
- Analysis completely based on my own code with the tools available in the CMSSW

2009 - present Working in CMS WebBased Monitoring (WBM) group on developing online monitoring tools for the CMS experiment

- Projects Developed with WBM group:

- **CMS PageZero:** CMS internal page providing detailed information about CMS and LHC
- **CMS Page1:** CMS Public page providing information about CMS and LHC Status
- **FillReport:** CMS Private page with detailed information and plots describing LHC and CMS performance during each fill

- **DataSummary:** CMS internal page with detailed daily, weekly and yearly summary information and plots

- Offline/Online Data Quality Monitoring (DQM):

- Supervised DQM shifts at Fermilab Remote Operation Center
- Conducted trainings for DQM shift-takers

2008 - 2009 Worked on the CMS Pixel Detector at Paul Scherrer Institute (PSI), Switzerland as part of the PIRE program

- Commissioning of the barrel of the Pixel Detector
 - Testing and calibrating the detectors
 - Improving pixelOnlineSoftware for proper detector initialization and testing purposes
- Pixel Detector Upgrade Project
 - Working on the development of new 8 bit ADC design

2006 - 2008 Graduate Teaching Assistant - Kansas State University

- Course taught : General Physics I laboratory
- Grading duties : Engineering Physics, General Physics

2002 - 2004 Research Assistant - Tbilisi State University, Department of Material Research

- Worked on inverting the conductivity type of ZnO wide band gap semiconductors

PHYSICS OUTREACH

March 2013 - *QuarkNet*: Helped facilitate the *QuarkNet* outreach program for the physics teachers and their students at the Kansas State University.

CONFERENCES AND PRESENTATIONS

2013 Invited speaker at the HEP Seminar at the University of Kansas: Angular distribution of the di-boson production at the CMS

2012 APS Prairie Section Meeting: Study of $Z\gamma$ Helicity Distributions at the CMS

2012 CHEP2012: New Developments in Web Based Monitoring at the CMS Experiment

2011 American Physical Society, APS April Meeting: Study of $Z\gamma$ Helicity Distributions at the CMS

2009 JTERM IV: Physics with WZ production at LPC

2008 PIRE Annual Meeting at University of Kansas: CMS Pixel Detector Upgrade

COMPUTER SKILLS

Programming Languages/Tools : C/C++ (Microsoft Visual C++, Borland C++ Builder), Java, Pascal (Borland Turbo Pascal, Borland Delphi), Basic (Microsoft QBasic), Perl, Python, HTML (JScript/JavaScript programming), SQL (for databases)

Operating Systems : Windows, Linux, Unix/Solaris

Frameworks : ROOT, CMSSW

Databases (DBMS) : MySQL, ORACLE

LIST OF PUBLICATIONS

Papers

1. CMS Collaboration, Measurement of the $W\gamma$ and $Z\gamma$ inclusive cross sections in pp collisions at $\sqrt{s} = 7$ TeV and limits on anomalous triple gauge boson couplings. <http://link.aps.org/doi/10.1103/PhysRevD.89.092005> Phys. Rev. D. 89.092005.
2. CMS Collaboration, "Measurement of $W\gamma$ and $Z\gamma$ production in pp collisions at $\sqrt{s} = 7$ TeV", arXiv:1105.2758 [hep-ex], Phys. Lett. B701, 535-555 (2011)
3. T.Andronikashvili, T.Butkhuzi, M Sharvashidze, L.Aptsiauri, I.Chakaberia, Z.Kutchujashvili, "Calculation of Pressure Necessary to Invert Conductivity Type in ZnO", Journal Macne of Georgian Academy of Science, 2002, v. 28, No 3-4

CMS Internal Notes

4. "Measurement of inclusive $W\gamma$ and $Z\gamma$ cross-sections and limits on anomalous trilinear W gauge boson couplings at $\sqrt{s} = 7$ TeV", CMS AN-2010/279
5. "Study of $W\gamma$ and $Z\gamma$ production at the CMS with $\sqrt{s} = 7$ TeV", CMS AN-2011/251

Conference Proceedings

6. W.Badgett, I.Chakaberia, J.A.Lopez-Perez, K.Maeshima, S.Maruyama, A.Soha, B.Sulmanas and Z.Wan, "New Developments at Web Based Monitoring at the CMS Experiment", Journal of Physics: Conference Series 396 (2012) 062002
7. W.Badgett, I.Chakaberia, J.A.Lopez-Perez, K.Maeshima, S.Maruyama, A.Soha, B.Sulmanas and Z.Wan, "CMS Online Web-Based Monitoring", Physics Procedia 37 (2012) p.1869 1875
8. W.Badgett, I.Chakaberia, J.A.Lopez-Perez, K.Maeshima, S.Maruyama, A.Soha, B.Sulmanas and Z.Wan, "Web based monitoring in the CMS experiment at CERN", Journal of Physics: Conference Series 331 (2011) 022025

Acknowledgements and Participation

9. W.Badgett, J.A.Lopez-Perez, K.Maeshima, S.Maruyama, A.Soha, B.Sulmanas "CMS Web-Based Monitoring", Real Time Conference (RT), 2010 17th IEEE-NPSS
10. Conveners: A. de Gouvêa, K. Pitts, K. Scholberg, G.P. Zeller, "Fundamental Physics at the Intensity Frontier", SLAC-R-991, ANL-HEP-TR-12-25