Resume of Oliver Gutsche

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- Particle physicist conducting **leading edge research** for New Physics Beyond the Standard Model of Particle Physics
  - Multiple years of experience in analyzing high-energy collisions using a multitude of different techniques. One of my most noticeable publications is the **Observation of the Higgs Boson in 2012**.
- **Leader in scientific computing**
  - Expert in object oriented software development, statistical data analysis methods and Monte Carlo simulation techniques as well as various optimization and machine learning techniques.
  - Deep experience in planning, developing, and operating distributed computing infrastructures that provide access to several hundred-thousand computing cores and hundreds of petabytes of disk space.
  - Intimately familiar with scientific grid sites, academic and commercial clouds and U.S. supercomputers.
  - Part of a worldwide community planning process for the software and computing infrastructure of the High Luminosity LHC (HL-LHC, 2016). Contributed to the overview white paper of the community and editor of the topical white paper about the future of data analysis in High Energy Physics.
  - Interested in using idustry technologies for petabyte scale analysis (CMS Big Data Project).
- **U.S.CMS Software and Computing Operations Deputy Program manager** enabling analysis of LHC particle collisions in the U.S. for the 2500 physicist strong CMS collaboration.

Research Positions

09/2014 - Present	Scientist	Fermi National Accelerator Laboratory (Fermilab)
06/2009 – 09/2014	Application Physicist I	Fermi National Accelerator Laboratory (Fermilab)
06/2005 – 05/2009	Research Associate	Fermi National Accelerator Laboratory (Fermilab)
09/2001 – 02/2005	Doctoral Candidate	Deutsches Elektronen Synchrotron (DESY)

Education

2001-2005	**University of Hamburg**, *Doctor of Natural Sciences*, Hamburg, Germany
Thesis title	*Measurement of beauty quark cross sections in photoproduction with the ZEUS experiment at the electron proton collider HERA* (link)
Advisors	Prof. Dr. Robert Klanner, Dr. Achim Geiser

Assignments

10/2016 - present	Deputy U.S.CMS Software and Computing Operations Program manager
10/2016 - present	L2 manager for Software and Support - U.S.CMS Operations Program
10/2016 - present	Deputy Head of the Scientific Services Quadrant - Fermilab
09/2015 – present	Focus Area Lead for Computing Infrastructure and Resources - CMS Collaboration

Research and Technical Experience

- Joined the CMS collaboration in 2005. Research focus: search for physics beyond the Standard Model at the LHC, especially for Supersymmetry and Dark Matter.
  - Founding member of an analysis group with members from Fermilab/UCSD/UCSB, focusing on final states with leptons.
  - Supervised several Fermilab postdoctoral researchers.
  - Current postdoctoral researcher Matteo Cremonesi is searching for Dark Matter with the CMS detector.
- Extensive experience in operating large distributed computing infrastructures: operated the entire CMS computing resources in LHC Run 1 leading up to the Higgs discovery with a team of 60 individuals distributed across the world
- Part of the worldwide community efforts to plan for the software and computing infrastucture for the High Luminosity LHC (HL-LHC): I was an integral part of the community planning process and my input was documented in the Roadmap for HEP Software and Computing R&D for the 2020s. I was editor of the HEP Software Foundation Community White Paper Working Group - Data Analysis and Interpretation.
- My recent research interest in computing infrastructure explores if analysis in HEP can be conducted more efficiently using tools developed and used by industry. I am exploring using toolkits like Apache Spark and similar technologies. I created a research group spanning researchers from Fermilab, CERN and the Universities Princeton, Padova and Vanderbilt. The CMS Big Data Project also very closely works together with industry, latest in a project with Intel in the context of CERN openlab.
- I am currently the U.S. CMS Software and Computing Operations Program deputy manager enabling analysis of U.S. collaborators of the CMS experiment. I am overseeing the operation of the U.S. CMS Tier-1 site at Fermilab and 7 U.S. Tier-2 sites at Caltech, Florida University, MIT, University of Nebraska-Lincoln, Purdue University, UC San Diego, Unversity of Wisconsin-Madison. I lead effort to administer the sites, maintain the computing infrastructure and conduct strategic R&D projects.
- In 2015, the CMS collaboration appointed me Focus Area Lead for Services and Infrastructure in the CMS Software and Computing project. I am coordinating the efforts of the worldwide submission infrastructure, innovative new ways of using resources at commercial clouds and supercomputing centers, and the development of computing insfrastructure services like data management and workflow management systems.

Selected Recent Publications in Physics and Computing

A.M. Sirunyan et al., **Search for dark matter in events with energetic, hadronically decaying top quarks and missing transverse momentum at $\sqrt{s} = 13$ TeV**, *JHEP.* 06 (2018) 027, doi:10.1007/JHEP06(2018)027, arXiv:1801.08427 [hep-ex]

V. Khachatryan et al., **Measurements of $t\bar{t}$ charge asymmetry using dilepton final states in pp collisions at $\sqrt{s} = 8$ TeV**, *Phys. Lett.* B760 (2016) 365–386, doi:10.1016/j.physletb.2016.07.006, arXiv:1603.06221 [hep-ex]

L. Bauerdick et al., **HEP Software Foundation Community White Paper Working Group - Data Analysis and Interpretation**, (2018), arXiv:1804.03983 [physics.comp-ph]

A.A. Alves Jr et al., **A Roadmap for HEP Software and Computing R&D for the 2020s**, (2017), arXiv:1712.06982 [physics.comp-ph]

- Full List of Physics Publications with Major Personal Contributions can be found here.
- Full List of Computing Publications with Major Personal Contributions can be found here.
- Full List of Presentations and Talks can be found here.
- Full CV can be found here.