Viktor D. Khristenko

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- **Languages** Russian(native) • English(native fluency) • French(B1-B2)

Professional Activities

Software Engineer   2017 Sep - Current
  CERN - *European Organization for Nuclear Research, Geneva, Switzerland*
  - Large Scale HEP Data Processing with Apache Spark. From I/O to physics analytics.
  - Heterogeneous data processing for CMS Experiment. Porting CPU workflows to run on CUDA and OpenCL enabled devices
  - Employing High Performance Computing resources, provided by Juelich Supercomputing Center (JSC), for HEP data processing. Software distribution and configuration

Group Lead - CMS Hadron Calorimeter Data Quality Monitoring Group   2014-Current
  CERN - *European Organization for Nuclear Research, Geneva, Switzerland*
  - Responsible for Data Certification Process - Validating the Usability of Collected Data by Physics Analyses
  - Designed and Implemented Criteria & Instructions targeting Calorimeter Performance Evaluation
  - Critical **Data-driven Quality Control Applications**

Deputy Coordinator - CMS Hadron Calorimeter Operations Group   2015-2016
  CMS - *Compact Muon Solenoid Experiment @CERN, Geneva, Switzerland*
  - "CMS 2015 Achievement Award"
  - Responsible for Operational Aspects of all the Components of the **Calorimeter** System
  - Coordination ⇒ Installation ⇒ Debugging ⇒ DataTaking ⇒ Status Report ⇒ Collaboration ⇒ Training Newcomers

Graduate Research Assistant   2014-Current
  CMS *Experiment @CERN, Geneva, Switzerland* • *The University of Iowa, Iowa City, IA, USA*
  - **Big Data** Analyses, e.g. **Higgs Boson** Searches
  - Design, construction and analysis of **Monte Carlo** Simulations of Particle Detectors using **Geant4**
  - Data Analysis and Operations Support for **Fermilab** T-1041 "CMS Forward Calorimetry R&D" Experiment

Open Source Activity

ROOT4J
  https://github.com/diana-hep/root4j
  - ROOT I/O for JVM

Spark-Root
  https://github.com/diana-hep/spark-root
  - Extension of ROOT4J for use with Apache Spark

Programming Skills

Experienced
  C/C++/STL/Boost • *python* • *Scala* • *Apache Spark/MapReduce* • *SQL* • *Graphlab* • *ROOT* • *git* • • *LaTeX* • *scikit-learn*

Familiar
  Java • *JScript* • *php* • *Elixir/Erlang* • *Pascal* • *Go*

Education

PhD in Physics 2012-2017
The University of Iowa, Iowa City, IA, USA
- Thesis Title, "Search for the Standard Model Higgs Boson in the $\mu^+\mu^-$ decay channel in pp collisions at $\sqrt{s} = 13$ TeV in CMS, Calibration of CMS Hadron Forward Calorimeter and Simulations of Modern Calorimeter Systems"

BA Physics and Mathematics; Cum Laude 2009-2012
Coe College, Cedar Rapids, IA, USA
- **Minor in Computer Science**
- Dean's List Spring 2010 & Fall 2010

Department of Cybernetics 2008-2009
Moscow Engineering Physics Institute, Moscow, Russia

Online Education Certificates
Coursera
- **Functional Programming** Principles in **Scala** (EPFL). Certificate
- **Functional Program** Design in **Scala** (EPFL). Certificate
- **Machine Learning** Foundations: A Case Study Approach (University of Washington) Certificate
- **Machine Learning**: Regression (University of Washington) Certificate
- **Machine Learning**: Classification (University of Washington) Certificate

Athletic Activities

Volunteer Assistant Tennis Coach 2013-2014
The University of Iowa Hawkeyes Men's Tennis Team, NCAA Division 1

Student Athlete 2009-2012
Coe College, Varsity Men's Tennis Team, NCAA Division 3
- IIAC Team Champion (2012)
- NCAA Regionally Ranked in Singles (2011, 2012)
- IIAC All-Conference (2009, 2011, 2012)
- IIAC Conference Champion (2009, 2010, 2011, 2012)
- Team Captain (2011, 2012)

Publications & Presentations

- "SPARK-ROOT: ROOT I/O for JVM and Applications for Apache Spark"
  "ROOT I/O Workshop", CERN, Feb 2017
- "10B NMR Powder Pattern Optimized for Distribution of the Quadrupole Parameters"
  "Borate 2011: 7th International Conference on Borate Glasses, Crystals and Melts" Halifax, NS Canada
- V. Khristenko et al., "SpectraFit: A New Program to Simulate and Fit Distributed 10B Powder Patterns: Application to Symmetric Trigonal Borons.", Phys. Chem. Glasses: Eur. J. Glass Sci Technol. B, June 2012, 53 (3), 121-127.
- U. Akgun, ..., V. Khristenko et al., "Characterization of 1800 Hamamatsu R7600-M4PMTs for CMS HF Calorimeter upgrade", Journal of Instrumentation, 2014 JINST 9 T06005
- M. Dettmann, ..., V. Khristenko et al., accepted for publication, "Radiation Hard Plastic Scintillators for a New Generation of Particle Detectors", JINST_023P_0716
- U. Akgun, ..., V. Khristenko et al., "Quartz Plate Calorimeter Prototype with Wavelength Shifting Fibers", Journal of Instrumentation, JINST 002P 0412, 2012
- A. Albayrak-Yetkin, ..., V. Khristenko "Secondary Emission Calorimetry: Fast and Radiation-Hard", Snowmass White Paper, arXiv: 1307.8051.