Viktor Khristenko

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- *Linkedin*   https://www.linkedin.com/in/viktor-khristenko
- *Github*   https://github.com/vkhristenko
- ***Languages*** Russian(native) • English(native fluency) • French(B1)

Professional Activities

Software Engineer   2017 Sep - Current

    CERN - *European Organization for Nuclear Research, Geneva, Switzerland*
- ***Large Scale HEP Data Processing*** with Apache Spark. Implemented a Data Source for CERN's ROOT data format. `https://www.youtube.com/watch?v=JTMdkSmw0Kc`
- ***Heterogeneous data processing for CMS Experiment***. Ported CPU-based algorithms to run on Nvidia GPUs
- ***Employing HPC resources*** for HEP data processing. Software distribution and configuration

Group Lead - CMS Hadron Calorimeter Data Quality Monitoring Group   2014-2017

    CERN - *European Organization for Nuclear Research, Geneva, Switzerland*
- Designed and Implemented Critical ***Data-driven Quality Control Applications***
- Responsible for Data Certification Process - Validating the Usability of Collected Data by Physics Analyses

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

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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

Programming Skills

Languages/etc - Experienced
  C/C++/STL/Boost/OpenMP/MPI/tbb/CUDA/pthreads/OpenCL/SYCL ● Scala ● Python ● SQL ●bash
Languages/etc - Familiar
  asm ● Java ● Go ● Rust ● php ● Exilir/Erlang
Version Control
  git/mercurcy
Big Data
  Apache Spark/MapReduce ● HDFS ● ROOT ● TensorFlow/Keras/Scikit-Learn/Graphlab
Hardware Design/FPGAs - Familiar
  Verilog/HLS ● Xilinx Vivado/Cadence Xcelium

Publications & Presentations

- "HEP Data Processing with Apache Spark"
  "Spark Summit", London, Oct. 2018, https: // www. youtube. com/ watch? v=JTMdkSmwOKc
- "Integrating ROOT I/O with Apache Spark"
  "ROOT Users' Workshop", Sarajevo, Sep 2018, https: // indico. cern. ch/ event/ 697389/ contributions/ 3102790/ attachments/
- "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

- A.M. Sirunyan, ..., V. Khristenko et al., "Search for the Higgs Boson Decaying to Two Muons in Proton-Proton Collisions at $\sqrt{s} = 13$ TeV", Physical Review Letters, 14 January 2019, https://doi.org/10.1103/PhysRevLett.122.021801
- 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.

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)