Oleg Kamaev

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Summary of Qualifications

- Over 5 years of experience in quantitative data analysis, mathematical modeling of physical processes, numerical programming.
- Solid academic background in Physics, Applied Mathematics, Statistical Analysis.
- Author and co-author of over 20 publications in peer-reviewed journals and proceedings of national and international conferences.
- A quick learner who can communicate clearly and effectively.
- Highly energetic and result-oriented with strong analytical and problem-solving skills.

Areas of Expertise:

- data mining	- statistical inference	- algorithms design
- machine learning	- relational databases	- software development
- predictive analytics	- Monte Carlo simulations	- technical writing

Technical Skills:

- Programming languages: MATLAB, Python, Fortran
- Relational databases: MySQL, MS Access
- Version control systems: CVS, Git
- UNIX environments: Linux, Mac OS
- Statistical techniques: regression, MLE, nonlinear optimization, pattern search, principal component analysis, neural networks
- Application software: MS Excel, VBA macros, MS PowerPoint, Origin, LaTeX, Emacs, HTML

Experience

Research Fellow / Lecturer **2011 – 2014**
Queen's University, Kingston, Canada

– Processed, cleaned, and analyzed (MATLAB, Python) large datasets collected by a world-leading experiment to search for dark matter and other rare events.

– Fitted physical models to experimental data for event classification; applied regression and unconstrained nonlinear optimization. Utilized maximum likelihood analysis to test signal hypothesis against background model.

– Effectively communicated results at leading national/international conferences (see, e.g., a talk that I gave at 2013 Canadian Association of Physicists Congress: http://tinyurl.com/oov4ha4).

– Mentored several M.Sc. and undergraduate research students on data analysis including MATLAB programming and statistical techniques.

Research Associate **2008 – 2010**
University of Minnesota, Minneapolis, USA
Cryogenic Dark Matter Search experiment:

– Investigated neural network discrimination technique for signal/background separation. Used advanced statistical methods to perform high-dimensional data analysis.

– Developed software to optimize and automate techniques for setting event selection criteria that increased the expected signal sensitivity while minimizing backgrounds; applied constrained minimization using pattern search in MATLAB for numerical optimization.

- Led the work to establish statistical criteria to identify and remove bad datasets due to periods of poor detector performance.
- Designed and programmed data analysis tools (MATLAB, MySQL, Excel) to estimate concentration of radioactive contaminations in samples; being used since 2010 to routinely analyze materials. Developed Monte Carlo simulations of the corresponding physical processes.
- Prepared results and published analysis papers in refereed scientific journals.

Research Assistant **2004 – 2007**
Illinois Institute of Technology, Chicago, USA
Particle physics experiments at Fermilab:
- Developed specialized algorithms (Fortran, C++) to reconstruct, observe, and measure properties of rare events from ∼TB datasets. Published results.
- Applied unbinned generalized likelihood fits to extract model parameters from low-statistics samples. Used Monte Carlo technique to estimate systematic errors and confidence intervals.
- Authored a computer program to readout low voltages (hundreds of channels) from the various crate power supplies and write them into SQL database.

Education, Certifications

Ph.D. in Physics **2007**
Illinois Institute of Technology, Chicago, USA

Certificates in SQL, Relational Design Theory, UML
Stanford online

Selected Refereed Publications

- R. Agnese *et al.* [SuperCDMS Collaboration], "Search for Low-Mass Weakly Interacting Massive Particles Using Voltage-Assisted Calorimetric Ionization Detection in the SuperCDMS Experiment," Phys. Rev. Lett. **112**, 041302 (2014).
- R. Agnese *et al.* [CDMS Collaboration], "Silicon Detector Dark Matter Results from the Final Exposure of CDMS II," Phys. Rev. Lett. **111**, 251301 (2013).
- Z. Ahmed *et al.* [CDMS collaboration], "Dark Matter Search Results from the CDMS II Experiment," Science **327**, 1619 (2010).
- O. Kamaev *et al.* [HyperCP Collaboration], "Study of the Rare Hyperon Decay $\Omega^{\mp} \to \Xi^{\mp}\, \pi^{+}\pi^{-}$," Phys. Lett. B. **693**, 236 (2010).

Additional Information

Permanent Resident of Canada.