Curriculum vitae

PERSONAL DATA

Name : Andrey Krokhotin
Nationality : Russia
Gender : male

EDUCATION

Ph.D. December 29th, 2008
Institute for Theoretical and Experimental Physics (ITEP), Moscow, Russia
Thesis: Calibration of the very forward calorimeter of CMS experiment
PhD supervisor Vladimir Gavrilov

Master of Science 1999
Moscow Institute for Physics and Technology (MIPT), Moscow, Russia
Thesis: Discovery of a heavy Higgs boson at CMS experiment through $H \rightarrow WW \rightarrow jjl\nu\nu$
Scientific adviser Vladimir Gavrilov

EMPLOYMENT

Postdoctoral researcher 2010-2012
Department of Physics and Astronomy, Uppsala University

Senior Research Scientist 2008-2010
Institute for Theoretical and Experimental Physics, Moscow, Russia

Research Scientist 2003-2008
Institute for Theoretical and Experimental Physics, Moscow, Russia

Research Assistant 1999-2003
Institute for Theoretical and Experimental Physics, Moscow, Russia

LONG TERM VISITS

European Organization for Nuclear Research (CERN)	60% of my time during 1999-2008
University of Tours, Tours, France	Fall 2011, 2012
Beijing Institute of Technology	Fall 2012

PUBLICATIONS

Peer-reviewed/total ~ 39/60

ORGANIZATIONAL SKILLS

International Moscow School of Physics 2002-2010
Scientific secretary
http://www.itep.ru/ws/index.html

STUDENT SUPERSIVION

Xubiao Peng	(doctoral student, co-supervisor, primary supervisor Antti Niemi)	2010-2012
Martin Lundgren	(doctoral student co-supervisor, primary supervisor Antti Niemi)	2010-2012
Natalya Ilina	(supervisor, masters student)	2003-2004
	(doctoral student, co-supervisor, primary supervisor Vladimir Gavrilov)	2004-2010
Askhat Anetbaev	(masters student)	2002-2003

Eugene Andriyash (masters student) 2001-2002

TEACHING EXPERIENCE

Methods in high energy physics (co-lecturer) 2001-2003
for masters students
Moscow Institute for Physics and Technology (MIPT) & Institute for Theoretical and Experimental Physics (ITEP)

SELECTED CONTRIBUTED CONFERENCE PRESENTATIONS

Dynamics of Biomolecular Processes: From Atomistic Representations to Coarse-Grained Models, Nordita program, Stockholm, Sweden 2012
Poster: Soliton concepts and the protein structure

Hadron Structure and QCD Conference, Gatchina, Russia 2008
Talk: Jet physics and MC generator with BFKL-evolution

UNCONVENTIONAL RESEARCH CAREER

My background and most of my research experience comes from experimental high energy physics. I worked at CMS experiment at the Large Hadron Collider (LHC) in CERN. I was engaged in preparation of the experiment and in the analysis of collected experimental data after start of the LHC operation. My research also included more theoretically oriented part. In particular I participated in the development of a new Monte Carlo generator for the detailed simulation of proton-proton collisions with BFKL-type shower evolution. I contributed to more than 30 publications of CMS collaboration, **I have over 3200 citations, and my H-index is 23**

In 2010 I drastically changed the area of my scientific interests to the field of biological physics. I worked in the group of Prof. Antti Niemi in the field of protein folding. We developed very original model which utilizes solitons as the structural self-organizers to model folded proteins and to describe how proteins fold. The originality of our approach has attracted attention. For example, during last year our research has been described in several scientific blogs. Some notable examples are *http://www.technologyreview.com*(MIT) (twice) and *http://waterinbiology.blogspot.com*

List of Publications

Papers related to protein folding research

[1] Andrey Krokhotin, Martin Lundgren, and Antti J. Niemi, Solitons and collapse in the λ−repressor protein, Phys. Rev. E 86, 021923 (2012) (citations: 0)

[2] Andrey Krokhotin, Adam Liwo, Antti J. Niemi, and Harold A. Scheraga, Coexistence of Phases in a Protein Heterodimer, J. Chem. Phys. 137, 035101 (2012) (citations: 0)

[3] Andrei Krokhotin, Antti J. Niemi, and Xubiao Peng, Soliton concepts and protein structure, Phys. Rev. E 85, 031906 (2012) (citations: 3)

[4] Shuangwei Hu, Andrei Krokhotin, Antti J. Niemi, and Xubiao Peng, Towards quantitative classification of folded proteins in terms of elementary functions, Phys. Rev. E 83, 041907 (2011) (citations: 4)

My research and educational background is in high energy physics. I have published extensively, as part of CMS experiment at CERN. My total citation count in high energy physics is 3264 (source: Google Scholar)

Papers related to high energy physics

[5]S. Chatrchyan et al. (CMS Collaboration), Measurement of the Inclusive Jet Cross Section in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*. **107**, 132001 (2011) (citations: 31)

[6] V. Khachatryan et al. (CMS Collaboration), Search for Supersymmetry in pp Collisions at $\sqrt{s} = 7$ TeV in Events with Two Photons and Missing Transverse Energy, *Phys. Rev. Lett*. **106**, 211802 (2011) (citations:37)

[7] V. Khachatryan et al. (CMS Collaboration), Measurement of Dijet Angular Distributions and Search for Quark Compositeness in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*. **106**, 201804 (2011) (citations: 36)

[8] V. Khachatryan et al. (CMS Collaboration), Dijet Azimuthal Decorrelations in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*. **106**, 122003 (2011)(citations: 31)

[9] V. Khachatryan et al. (CMS Collaboration), Measurement of the B^+ Production Cross Section in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*. **106**, 112001 (2011) (citations: 27)

[10] V. Khachatryan et al. (CMS Collaboration), Measurement of the Isolated Prompt Photon Production Cross Section in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*. **106**, 082001 (2011) (citations: 22)

[11] V. Khachatryan et al. (CMS Collaboration), Search for Stopped Gluinos in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*., **106**, 011801 (2011) (citations: 40)

[12] V. Khachatryan et al. (CMS Collaboration), First measurement of hadronic event shapes in pp collisions at $\sqrt{s} = 7$ TeV, *Phys. Lett. B*, **699** (2011) 48 (citations: 14)

[13] V. Khachatryan et al. (CMS Collaboration), First measurement of the cross section for top-quark pair production in proton proton collisions at $\sqrt{s} = 7$ TeV, *Phys. Lett. B*, **695** (2011) 424 (citations: 98)

[14] V. Khachatryan et al. (CMS Collaboration), Measurements of inclusive W and Z cross sections in pp collisions at $\sqrt{s} = 7$ TeV, *J. High Energy Phys*., **01** (2011) 080 (citations: 159)

[15] V. Khachatryan et al. (CMS Collaboration), Charged particle multiplicities in pp interactions at $\sqrt{s}$ = 0.9, 2.36, and 7 TeV, *J. High Energy Phys*., **01** (2011) 079 (citations: 41)

[16] V. Khachatryan et al. (CMS Collaboration), Prompt and non-prompt J/Ψ production in pp collisions at $\sqrt{s} = 7$ TeV, *Eur. Phys. J. C***71** (2011) 1575 (citations: 80)

[17] V. Khachatryan et al. (CMS Collaboration), Observation of long-range, near-side angular correlations in proton-proton collisions at the LHC, *J. High Energy Phys*. **09** (2010) 091 (citations: 148)

[18] V. Khachatryan et al. (CMS Collaboration), Search for Quark Compositeness with the Dijet Centrality Ratio in pp Collisions at $\sqrt{s} = 7$ TeV, *Phys. Rev. Lett*., **105**, 262001 (2010) (citations: 20)

[19] V. Khachatryan et al. (CMS Collaboration), Measurement of the charge ratio of atmospheric muons with the CMS, *Phys. Lett. B***692** (2010) 83 (citations: 17)

[20] V. Khachatryan et al. (CMS Collaboration), Search for Dijet Resonances in 7 TeV pp Collisions at CMS, *Phys. Rev. Lett.***105**, 211801 (2010) (citations: 90)

[21] V. Khachatryan et al. (CMS Collaboration), First Measurement of Bose-Einstein Correlations in Proton-Proton Collisions at $\sqrt{s}$ = 0.9 and 2.36 TeV at the LHC,*Phys. Rev. Lett*., **105**, 032001 (2010) (citations: 28)
[22] V. Khachatryan et al. (CMS Collaboration), Transverse-Momentum and Pseudorapidity Distributions of Charged Hadrons in pp Collisions at $\sqrt{s} = 7$ TeV,*Phys. Rev. Lett*. **105**, 022002 (2010) (citations: 111)
[23] V. Khachatryan et al. (CMS Collaboration), CMS tracking performance results from early LHC operation, *Eur. Phys. J. C***70** (2010) 1165 (citations: 93)
[24] V. Khachatryan et al. (CMS Collaboration), First measurement of the underlying event activity at the LHC with $\sqrt{s} = 0.9$ TeV, *Eur. Phys. J. C***70** (2010) 555 (citations: 37)
[25] V. Khachatryan et al. (CMS Collaboration), Performance of CMS hadron calorimeter timing and synchronization using test beam, cosmic ray, and LHC beam data, *JINST***5** (2010) T03013 (citations: 21)
[26] V. Khachatryan et al. (CMS Collaboration), Time reconstruction and performance of the CMS electromagnetic calorimeter, *JINST* **5** (2010) T03011 (citations: 13)
[27] V. Khachatryan et al. (CMS Collaboration), Commissioning of the CMS experiment and the cosmic run at four tesla, *JINST* **5** (2010) T03001 (citations: 43)
[28] V. Khachatryan et al. (CMS Collaboration), Study of various photomultiplier tubes with muon beams and Cerenkov light produced in electron showers, *JINST* **5** (2010) P06002 (citations: 3)
[29] V. Khachatryan et al. (CMS Collaboration), Measurement of the muon stopping power in lead tungstate, *JINST* **5** (2010) P03007 (citations: 19)
[30] V. Khachatryan et al. (CMS Collaboration), Transverse-momentum and pseudorapidity distributions of charged hadrons in pp collisions at $\sqrt{s}$ = 0.9 and 2.36 TeV, *J. High Energy Phys.***02** (2010) 041 (citations: 182)
[31] V.T.Kim, S.V.Evstyukhin, V.B.Gavrilov, A.A.Krokhotin, V.A.Murzin, V.A.Oreshkin, G.B.Pivovarov, G.B.Safronov, BFKL jets: search for Higgs boson and graviton at the LHC, *Nucl. Phys. B - Proceedings Supplements* **198** (2010) 220 (citations: 1)
[32] V.B.Gavrilov, N.V. Ilyna, O.L.Kodolova and A.A.Krokhotin, Separation of signal and background events at the Compact Muon Solenoid of a Large Hadron Collider,*Moscow University Physics Bulletin* **64** (2009) 369 (citations: 0)
[33] Efe Yazgan and the CMS ECAL/HCAL Collaborations, The CMS barrel calorimeter response to particle beams from 2 to 350 GeV/c, *J. Phys.: Conf. Ser.***160** 012056 (2009) (citations: 16)
[34] S.Abdullin, et al., (CMS HCAL Collaborations), Design, performance, and calibration of the CMS hadron-outer calorimeter, *Eur. Phys. J. C***57** (2008) 653 (citations: 6)
[35] S.Abdullin, et al., (CMS-HCAL Collaboration), Design, Performance, and Calibration of CMS hadron-barrel calorimeter, *Eur. Phys. J. C***55** (2008) 159 (citations: 28)
[36] S.Abdullin et. al., (CMS-HCAL Collaboration), Design, Performance and Calibration of the CMS Forward Calorimeter Wedges, *Eur. Phys. J. C***53** (2008) 139 (citations: 41)
[37] V. Khachatryan et al. (CMS Collaboration), The CMS experiment at the CERN LHC, *JINST* 3 S08004 (2008) (citations: 1114)
[38] N. Akchurin, V. B. Gavrilov**,** A. A. Krokhotin, S. V. Semenov, A. L. Ulyanov, E. V. Vlasov, A. A. Ershov, Calibrating the forward calorimeter of the CMS detector using a ^{60}Co radioactive source, *Instruments and Experimental Techniques* **Vol.50**, 744-749 (2007) (citations: 1)
[39] G.L. Bayatian et al., (CMS Collaboration), CMS physics technical design report, volume II: Physics performance, *J. Phys. G***34** (2007) 995 (citations: 616)