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Education

- Ph.D. in Physics, University of Rochester (2004)
Thesis: measurement of the $t\bar{t}$ production cross section at $\sqrt{s} = 1.96$ TeV using lifetime tagging.
- M.S. in Physics, Moscow Institute of Physics and Technology, Russia (1989)

Positions

- Associate Professor, Oklahoma State University (2014-present)
- Assistant Professor, Oklahoma State University (2008-14)
- Research Assistant Professor, Oklahoma State University (2006-08)
- Assistant Research Scientist, Oklahoma State University (2005-06)
- Research Associate, Fermilab (2004-05)
- Graduate Research Assistant, University of Rochester (2003-04)
- Graduate Research Assistant, Kansas State University (2000-03)
- Scientific Associate, CERN (1998-99)
- Project Associate, CERN (1996-98)
- Researcher, Institute for Theoretical and Experimental Physics, Moscow, Russia (1989-99)

Professional experience

- Since 2006: ATLAS experiment at the LHC, CERN

Top quark physics: Measured the top quark pair production cross section in the lepton+jets channel (first analysis in the top group using the multivariate technique). Measured the top quark pair production in association with hard jets (first measurement at the LHC) and jet multiplicity in top quark pair decays. **b-tagging:** Lead the Oklahoma effort on estimation of the non-heavy-flavor jet-tagging probability (mistag rate). During the whole ATLAS Run I data taking period, our group took sole responsibility for the calibration of mistag performance in data. All ATLAS physics results using flavor identification algorithms were obtained with our calibration. Contributed to development of the first ATLAS b -tagging efficiency calibration procedure based on relative momentum of muons inside jets (p_T^{rel}) still used in the experiment. **Higgs boson physics:** Convener of US ATLAS Higgs analysis forum (2010-11). Co-organized US ATLAS Higgs Forum Meeting in BNL in May 2011. Searched for a heavy charged Higgs boson decaying into top and bottom quarks (ongoing project). **ATLAS detector upgrade:** b -tagging group contact for upgrade. Studied b -tagging performance at high luminosity (ongoing project). Studied perspectives of top quark coupling measurements at future colliders (ongoing project). **ATLAS pixel detector:** Support and development of ATLAS pixel detector calibration database software (2010-11).

- Since 2000: DØ experiment at the Tevatron, Fermilab

Convener of the tracking group (2008-09). Convener of the DØ Higgs group (2006-08). Leader of the DØ joint Higgs-new phenomena multilepton working group (2005-06). During my leadership, the DØ Higgs group produced results which in August 2008 lead to the first time exclusion of the Higgs boson with a mass of 170 GeV. Performed a search for the associated Higgs boson production in the $p\bar{p} \rightarrow WH \rightarrow WWW^* \rightarrow l^\pm l'^\pm + X$ process, and set the world best limit on the $p\bar{p} \rightarrow WH \rightarrow WWW^*$ production cross section. Wrote a track finding algorithm (Histogramming Track Finder, HTF) for the DØ central tracker. All DØ data collected since June 2002 was reconstructed using HTF. Developed a heavy-flavor jet-tagging algorithm (Counting Signed Impact Parameter, CSIP). Using this algorithm, measured the $t\bar{t}$ production cross section in the lepton+jets channel. Observed the $\chi_c \rightarrow J/\psi + \gamma$ process with γ reconstructed via e^+e^- conversions and studied the χ_{c1}/χ_{c2} production ratio. Wrote the track reconstruction code for the proposed DØ silicon tracker for Run IIb upgrade, and participated in performance studies that were incorporated into the DØ Run IIb Upgrade Technical Design Report. Contributed to simulation studies of the silicon microstrip detector and cluster reconstruction.

- 2004-05: LHC Physics Center at Fermilab

Leader of the CMS tracking group at the LHC Physics Center. Started this group from scratch in 2004. Initiated the work on a new track finding approach aimed at finding tracks without relying on innermost precise tracking detectors (pixels). Contributed to the development of the new CMS software framework CMSSW currently adapted by the CMS collaboration. Co-organized the LHC/Tevatron Tracking Workshop at Fermilab in August 2004.

- 1994-99: CMS experiment at the LHC, CERN

Wrote a track finding algorithm (Global Track Finder, GTF) for the CMS central tracker. Participated in studies of the CMS tracker performance, summarized in the Tracker Project Technical Design Report released in April 1998. Contributed to the development of the principal CMS simulation reconstruction package (CMSIM) and later the first C++ object oriented reconstruction framework for the CMS analysis (ORCA). One of three authors of the CMS fast Monte Carlo simulation package (CMSJET) which has been extensively used for physics studies since 1994.

- 1989-96: 3m Magnet Spectrometer at ITEP Proton Synchrotron, Moscow, Russia

Participated in data collection and analysis on the following experiments: production of strange particles in baryon exchange processes (ITEP-875), quasi elastic ($\pi-d$) backward scattering on nuclei at 0.7–1.3 GeV (ITEP-901), pion double charge exchange on light nuclei at 0.7–1.3 GeV (ITEP-923), and search for d' dibaryon in pp interactions (ITEP-942).

Conferences, workshops, and seminars in the last five years

- “Top quark pair charge asymmetry using the ATLAS detector at the LHC,” QCD@LHC 2014 (August 2014), Suzdal, Russia.
- “Beyond-the-Standard Model Higgs Physics using the ATLAS Experiment,” International Conference on New Frontiers in Physics (September 2013), Kolymbari, Crete, Greece.
- “Top quark couplings: $t\bar{t}$ +jets,” Snowmass Energy Frontier Workshop (April 2013), Brookhaven National Laboratory.

- “ $t\bar{t}$ +jets studies,” ttH Workshop (May 2013), Austin, Texas, USA.
- “The Higgs Boson Discovery,” seminar at Oklahoma State University (September 2012).
- “Top physics with ATLAS,” 15th Lomonosov Conference on Elementary Particle Physics (August 2011), Moscow, Russia.
- “Heavy Charged Higgs,” US ATLAS Higgs Forum Meeting (May 2011), Brookhaven National Laboratory.
- “b-tagging in ATLAS,” Fourth ATLAS Physics Workshop of the Americas (August 2010), Arlington, Texas, USA.
- “Summary of recent physics results from the Tevatron,” Hadron Structure and QCD (July 2010), Gatchina, Russia.
- “High energy physics: the LHC era,” seminar at University of Tulsa (February 2010).

Professional service work

- Member of organizing committee, 10th International Conference on Beauty Charm Hyperons in Hadronic interactions (July 2012), Wichita, Kansas, USA.
- Member of organizing committee, 3rd International Workshop on The Interconnection Between Particle Physics and Cosmology (May 2009), Norman, Oklahoma, USA.
- Reviewer, Journal of High Energy Physics

Memberships

- American Physical Society

Teaching

- General Physics I – calculus based (PHYS 2314)
- General Physics II – algebra based (PHYS 1214)
- Methods of Mathematical Physics (PHYS 3513)
- Introduction to Semiconductor Device Physics (PHYS 3313)
- Experimental Methods in High Energy Physics (PHYS 6260)

Supervising graduate students

- Dmitri Sidorov, 2011-present, doing his thesis in the ATLAS experiment

Outreach

- QuarkNet: physics master classes for high school students (2012-current), annual summer workshops for Oklahoma high school teachers (2007-current).
- Science Café: “The Search for Higgs Boson ‘God Particle,’” Oklahoma State University (October 2012).
- Interviews related to Higgs boson discovery (July 2012): “Teams of Oklahoma researchers celebrate Higgs boson discovery” (NewsOK), “OSU helped Higgs boson discovery” (Fox 23 News), “OSU Physicists Help Make Important Scientific Discovery” (News on 6).

Publications

The full list of 800+ publications is available at <http://inspirehep.net/author/A.Khanov.1/>
A representative list of recent publications on which I had major impact, includes:

- G. Aad *et al.* [ATLAS Collaboration], “Measurements of fiducial cross-sections for $t\bar{t}$ production with one or two additional b -jets in pp collisions at $\sqrt{s} = 8$ TeV using the ATLAS detector,” arXiv:1508.06868 [hep-ex], submitted to EPJC.
- G. Aad *et al.* [ATLAS Collaboration], “Measurement of the top pair production cross section in 8 TeV proton-proton collisions using kinematic information in the lepton+jets final state with ATLAS,” Phys. Rev. D **91**, no. 11, 112013 (2015).
- G. Aad *et al.* [ATLAS Collaboration], “Measurement of the top quark pair production cross-section with ATLAS in the single lepton channel,” Phys. Lett. B **711**, 244 (2012).
- G. Aad *et al.* [Atlas Collaboration], “Measurement of the top quark-pair production cross section with ATLAS in pp collisions at $\sqrt{s} = 7$ TeV,” Eur. Phys. J. C **71**, 1577 (2011).
- V. M. Abazov *et al.* [D0 Collaboration], “ b -Jet Identification in the D0 Experiment,” Nucl. Instrum. Meth. A **620**, 490 (2010).