

CURRICULUM VITAE – Dr. Dmitri Denisov

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Education Record

- 1978 - 1984** Moscow Physical Technical Institute, Moscow, B.S. in physics.
- 1985 - 1991** PhD, Institute for High Energy Physics, Protvino; Thesis topic: "Study of cumulative protons production in hadron-nuclei collisions at 40 GeV/c".
Advisor: Prof. Yu. M. Antipov

Employment Record

- 1985-1989** Institute for High Energy Physics, Protvino: Research Scientist, *SIGMA-M experiment*.
- 1989-1993** Institute for High Energy Physics, Protvino: Staff Scientist, *SIGMA-AJAX experiment, D0 experiment*.
- 1990-1991** Moscow Physical Technical Institute, Moscow: Lecturer.
- 1993-1994** Superconducting Super Collider Laboratory, Texas: Associate Scientist, *SDC experiment*.
- 1994-1999** Fermi National Accelerator Laboratory, Illinois: Associate Scientist, *D0 experiment, CMS experiment*.
- 1999-2005** Fermi National Accelerator Laboratory, Illinois: Scientist, *D0 experiment*.
- 2005-2011** Fermi National Accelerator Laboratory, Illinois: Senior Scientist, *D0 experiment*.
- 2011-2019** Fermi National Accelerator Laboratory, Illinois: Distinguished Scientist, *D0 experiment, ILC and FCC future colliders developments*.
- 2019-2020** Brookhaven National Laboratory, New York: Senior Scientist
Deputy Associate Laboratory Director for High Energy Physics
- 2020-now** Brookhaven National Laboratory, New York: Tenured Scientist
Deputy Associate Laboratory Director for High Energy Physics
- 2022-now** Stony Brook University, New York, Adjunct Professor
Department of Physics and Astronomy

Brief Overview of Research Activities

1981-1983 Participation in R&D program for “tagged neutrino” experiment at IHEP 70 GeV accelerator: determination of neutrino flavor and four-momentum by measuring π or K mesons neutrino decays. *Responsibilities*: construction of EM-calorimeter prototype

based on lead-scintillator design, construction and operation of liquid argon ionization chamber for measurements of electrons drift in liquid argon.

1983-1986 Participation in the experiment Sigma-M at IHEP accelerator: elastic scattering of π^+ and K mesons on protons at 43 GeV/c. High statistics and small systematic error measurements of differential distributions of elastic scattering in the transverse momentum range 0.05-1.0 GeV/c. *Responsibilities:* proportional wire chamber system for magnetic spectrometer, drift tubes system for track reconstruction, Monte Carlo simulation and elastic scattering data analysis.

1984-1988 Participation in experiment Sigma-Ajax at IHEP accelerator: investigation of muon pairs production in pion-nuclei interactions at 40 GeV/c. Cross sections of J/Psi production on nuclei, determination of branching ratio of $\pi^+ \rightarrow \mu^+ \nu_\mu$ and $e^- \mu^+$ universality test. *Responsibilities:* beam particle identification system design, analysis of J/Psi production cross sections and setting $e^- \mu^+$ universality limit in π^+ meson decays.

1985-1991 Participation in the experiment at IHEP accelerator: search for di-baryon resonances in hadron-nuclei collisions in the effective mass spectrum from 2 to 10 GeV/c² and investigation of cumulative particles production. *Responsibilities:* construction of drift tubes systems for track reconstruction and multiplicity measurements, Monte Carlo simulation development for efficiency calculations, design and operation of the array of scintillation counters with $\tau = 210$ ps time resolution, trigger system development, beam Cerenkov counter development for pbar selection with small backgrounds. Analysis of data with determination of upper limits on cross sections of di-baryon resonance production and measurements of parameters of processes with proton emission into backward hemisphere (kinematically forbidden region) with momentum 0.5-1.0 GeV/c.

1987-1999 Participation in the Run I of the D0 experiment at Fermilab. *Responsibilities:* physics analysis of the data collected with the D0 detector: inclusive muon cross section measurements, determination of J/Psi cross sections in the P_t region 2-16 GeV/c and rapidity region 2.5-3.7, b quark production and decay studies, comparison of results with different theoretical models, backgrounds and errors analysis, coordinating author for publication of the D0 results in Physical Review Letters. Leader of the group for design, production and commissioning of 6,000 drift tubes for Small Angle MUon Spectrometer (SAMUS); design, production and assembly of SAMUS toroid magnets; Monte Carlo analysis of spectrometer resolution and backgrounds; selection of gas mixture for drift tubes, high voltage system design and operation; off-line software development for data analysis.

1991-1994 Participation in the design of SDC detector for Superconducting Super Collider. *Responsibilities:* design of the muon system for the SSC detector, participation in the test beam activities, development of the technical design proposal.

1994-2001 Participation in the upgrade of the D0 detector for Run II. *Responsibilities:* optimization of the muon detector for operation at up to $3 \cdot 10^{32} \text{cm}^{-2} \text{s}^{-1}$ luminosity, design

and construction of the D0 forward muon scintillation counters arrays with 1 ns resolution and 50,000-channel mini-drift tube tracking detector with 1 mm coordinate resolution, front-end electronics, trigger, and DAQ systems for muon detectors. Since 1996 leadership of the forward muon project including design, construction, schedule, and funding for \$10M project.

1994-1996 Participation in the CMS experiment at the LHC collider at CERN.

Responsibilities: optimization of the muon detector design, participation in writing technical design report for US/CMS group, technical consultations.

1996-2002 Leader of the Fermilab Very Large Hadron Collider physics-detector group created for studies of physics and detectors for 100 TeV center of mass energy proton-proton collider. *Responsibilities:* development of physics case for the VLHC collider, requirements to the detectors and development of R&D program for VLHC detectors; organization of the group meetings and seminars, presentation of talks at seminars and conferences. Co-chair of the Organizing committee of the International Very Large Hadron Collider Physics and Detector Workshop held at Fermilab. Workshop proceedings and Workshop summary publication.

1999-2006 Leader of the D0 muon group. *Responsibilities:* managing all aspects of the D0 muon system installation, commissioning and operations including gas, high voltage, electronics calibration, trigger systems, survey, on-line and off-line data processing and data quality monitoring. Participation in muon reconstruction and identification efforts.

2001-2004 The D0 experiment Run Coordinator. *Responsibilities:* commissioning and managing operation of the D0 experiment during Tevatron Collider Run II, including all detectors, trigger, and on-line systems, Fermilab's mechanical and electrical support groups, coordination of the run activities with Accelerator Division, Trigger Board, off-line reconstruction group, and physics groups. After initial period of the experiment integration and physics commissioning achieved 90% physics data taking efficiency and collected data sample of 0.4fb^{-1} used for first Run II D0 publications.

2005-2014 Associated Head of the D0 department at Fermilab. *Responsibilities:* defining strategy of the department, hiring scientific and technical personnel, working with postdocs on their scientific research, developing budgets for the department and presenting department at various laboratory and DOE reviews.

2004-2006 Co-convener of the D0 experiment Electroweak physics group. *Responsibilities:* defining physics goals for the group based on physics priorities, detector, trigger, and reconstruction capabilities and coordinating group efforts in reaching these goals. Measurement of inclusive W and Z boson production cross sections and properties. Representing Electroweak group inside and outside of the D0 Collaboration. Coordinating physics analysis of students and post-docs. Presentation of D0 results at Conferences and seminars.

2006-present Elected Spokesperson of the D0 experiment. The experiment, under my leadership, published over 300 papers with such exciting results as discovery of the single top quark production, precision measurement of the W boson and top quark masses, discovery of the first baryon containing quarks from all three generations and observing evidence of the Higgs boson production at the Tevatron and its decay to fermions. *Responsibilities:* Spokesperson organizes the experiment by setting major physics and technical goals, appointing top experiment management, closely monitoring experiment progress, and making decisions on critical issues. Spokesperson assures that D0 results have the highest quality and integrity. Spokesperson represents the Collaboration in communication with the Laboratory, funding agencies, media and other experiments and organizations. Spokesperson actively engaged in obtaining funding for the Collaboration from the funding agencies, institutions, and the Laboratory as well as attracting new Collaboration members. Spokesperson promotes active Collaboration members inside the Collaboration as well as outside Collaboration via recommendations and personal contacts including help with search for jobs. Spokesperson assures that all remote collaborators have an ability to participate actively in the experiment via access to the data sets, participation in the meetings and discussions as well as presenting D0 results at conferences.

2013-2015 Project scientist for muon collider. *Responsibilities:* development of the physics program, specifications for the detectors and accelerator-detector interface.

2014–2019 Head of the Particle Physics Initiatives department. *Responsibilities:* Developing and coordinating Fermilab's program of activities related to future high energy colliders. Development of the scientific program and budgets, presenting programs to the funding agencies and responding on the review's questions, organizing day-by-day activities of the department. Strong detectors development program as well as weekly seminars on physics at future colliders have been developed with cosmic rays and test beam activities. Participation in FCC program (CERN), ILC program (Japan) and SepC program (China). Presentation of multiple seminars and colloquiums about goals and capabilities of future colliders in US and other countries.

2014-present Member of the American Linear Collider Committee. *Responsibilities:* the committee develops participation of US Universities and Laboratories in the linear colliders program including scientific directions, technical options and funding. Developed multiple proposals for cooperation between US and Japan on International Linear Collider project.

2016-2019 Manager of the Department of Energy funding for R&D on future linear colliders at Fermilab. *Responsibilities:* define the program, develop milestones and provide reports as well as direct funding to the appropriate activities.

2019-now Deputy Associate Laboratory Director for High Energy Physics at BNL. *Responsibilities:* Developing and executing programs in high energy physics including experiments and theoretical developments at energy, intensity, and cosmic frontiers.

2020-2022 Liaison between Energy Frontier and Accelerator Frontier for Snowmass 2021. *Responsibilities:* organization of joint frontiers meetings and discussions, developing and writing Snowmass summaries.

2021-now US representative on Physics and Detectors activities for CERN's Future Circular Colliders (FCC) program. *Responsibilities:* organization of US efforts on physics and detectors, development of the cooperation program and planning R&D program. Representing US in discussions with FCC collaboration and CERN management.

2021-now Coordination of Brookhaven National Laboratory participation in Snowmass and P5 process. *Responsibilities:* coordinating the laboratory activities on developing and proposing new experiments and facilities as part of US particle physics planning process.

Teaching Experience

1990-1991 Lectures on detectors for particle physics for students of Moscow Physical Technical Institute, Moscow

1996-1999 Supervision of graduate students working on D0 b physics analysis

1997-2000 Supervision of Fermilab's summer students. Fermilab Director recognition award for summer students' supervision

2000-2003 Presentation of lectures at the "D0 University" seminars

2005 Invited lecturer at "43rd International School of Subnuclear Physics", Erice, Italy

2007-2016 Supervision of two undergraduate students and one graduate student working on D0 experiment studies

2011 Invited lecturer at "49th International School of Subnuclear Physics", Erice, Italy

2012 Lecturer at the particle detectors school EDIT 2012, Fermilab

2009-2015 Presentation of multiple lectures at the "D0 University" seminars

2016 Lecturer at 2016 Fermilab-CERN School on high energy physics

2017-2021 Colloquiums at various US universities about physics and technology of future energy frontier colliders

2022-now Adjunct Professor, Stony Brook University, New York

Services for Physics Community from 1996

1996, 2001 Snowmass Workshop co-convener of the Very Large Hadron Collider physics and detectors group

1997 Principal Organizer of the "Very Large Hadron Collider Physics and Detectors Workshop" at Fermilab

1998-2019 Member of Fermilab Director Review committees of the CMS experiment, BTeV experiment, Minerva experiment, and NovA experiment

2003-now Reviewer of funding proposals for the US Department of Energy, Russian Academy of Sciences, Netherlands "Foundation for Fundamental Understanding of Matter" and other funding agencies

2004-2005 Electroweak session organizer for conference "Frontiers in Contemporary Physics", Vanderbilt University, 2005

2004-present Referee for IEEE "Transaction on Nuclear Science" journal

2004-2006 Reviewer of physics publications for Fermilab's Publication Office

2004-2006 Member of the International Union of Pure and Applied Physics working group on authorship in high energy physics

2005-2006 Organizer of the session "Physics Beyond Standard Model" at 2006 ICHEP Conference, Moscow, 2006

2006-2007 Member of the International Advisory Committee of Hadron Collider Physics Conference, Elba, May 2007

2005-2007 Member of the Fermilab Director Review committee of NOvA and Minerva experiments

2007-now Reviewer of the publication for Physical Review D journal

2007-2008 Member of the Working group of International Union of Pure and Applied Physics on accomplishments in high energy physics

2007-2008 Organizer of the Muon Detectors session at the IEEE Conference in Dresden, Germany

2008-2011 Member of the International Steering group on data preservation in High Energy Physics

2009 Member of the International Advisory Committee for Hadron Colliders Physics symposium, Evian, November 2009

2009-2010 Organizer of the session "Higgs Boson Searches" at 2010 ICHEP Conference, Paris, 2010

2009-2010 Member of the International Advisory Committee for Hadron Colliders Physics symposium, Toronto, August 2010

2009-2010 Convener of the session on Higgs, top and electroweak results at 2010 ICHEP conference

2010-2011 Member of the International Advisory Committee for Lepton Photon 2011 conference, India, 2011

2010- now Referee of the European Physical Journal C

2010-2011 Member of the International Advisory Committee for Hadron Colliders Physics symposium, Paris, November 2011

2011-2012 Member of the organizing committee of the school "Excellence in Detector and Instrumentation Technologies", Fermilab 2012.

2011-now Referee for Physical Review Letters

2011 Invited speaker at Erice School of sub-nuclear physics

2011-2012 Member of the International Advisory Committee for International Conference in High Energy Physics, Melbourne, July 2012.

2011-2012 Member of the International Advisory Committee for Hadron Colliders Physics symposium, Kyoto, November 2012

2011-2012 Chair of the Fermilab-CERN school on Hadron Colliders Physics, Fermilab, August 2012

- 2012-2019** Member of the LHC Committee (LHCC) to advice CERN Director on LHC detectors and collaborations
- 2012-now** Member of the International Advisory Committee for International Workshop “Higgs Hunting”
- 2013** Organizer of the Conference on Calorimetry in High energy physics, Paris, April 2013
- 2013** Chair of the BNL Directors’s review of the ATLAS detector upgrade readiness for CD-1 DOE decision
- 2012-2013** Convener of the Snowmass 2013 activities on 100 TeV proton-proton collider (VLHC)
- 2014** Chair of the BNL Director’s review of US-ATLAS operations program.
- 2014** Reviewer of NSF LHC Phase I upgrade proposals
- 2014** Member of the Upgrade Cost Group for review of Phase I LHC experiments cost, manpower and schedules
- 2014-2020** Chief referee of the CMS experiment at the LHCC committee at CERN
- 2015** Reviewer of BNL sPHENIX experiment proposal
- 2015** Reviewer of Fermilab’s Microboone experiment
- 2015-2018** Member of the US-Japan high energy physics committee
- 2015-now** Member of Fermilab/SLAC “Symmetry” magazine advisory board
- 2015** Chair of the program committee for 2015 Linear Collider workshop in Whistler (Canada)
- 2015** Reviewer of NSF proposals from ATLAS and CMS experiments for high luminosity LHC upgrades
- 2015** Reviewer of proto-DUNE project for large scale LAr detector at CERN
- 2015** Defense jury member for rehabilitation of Dr. Steve Muanza
- 2016 –2019** Member of the JINR committee on the “Long Range Strategy Plan for JINR up to 2030”
- 2016- 2019** Chair of the Fermilab scientists award committee
- 2016** Organizer of 2016 International Conference on High Energy Physics at Chicago
- 2016** Member of the International Advisory Committee of 2016 Linear Collider Workshop (Japan)
- 2016** Member of the best poster selection committee at North America Particle Accelerator Conference
- 2016-2017** Chair of the Organizing committee of the 2017 meeting of the Division of Particles and Fields of the American Physical Society
- 2016-now** Member of the International Advisory Committee of the Conference on Instrumentation for Colliding Beam Physics, Novosibirsk, Russia
- 2017** Chair of ATLAS operations review committee at BNL
- 2017** Deputy chair of NSF pre-PDR reviews of HL-LHC ATLAS and CMS upgrades
- 2017-2018** Leader of technical and scientific reviews for NSF MREFC upgrades of ATLAS and CMS experiments
- 2017-now** Member of ATLAS/Canada review committee for Canadian government
- 2017-2018** Member of the program committee for 2018 Asian Linear Colliders Workshop, Fukuoka (Japan)

2017	Chair of CMS high granularity calorimeter TDR review by LHCC
2017	Chair of CMS timing layer technical proposal review by LHCC
2018	Members of the program committee for 2018 Linear Colliders Workshop, Arlington (USA)
2018	Chair of US ATLAS CDR review for HL-LHC upgrades
2018	Member of Fermilab's director CD-1 review for HL-LHC CMS upgrades
2018	Chair of BNL director CD-1 review for HL-LHC ATLAS upgrade
2018	Convener of the organizing committee of 2018 ICHEP conference for "Future Accelerator Facilities" sessions, Seoul (Korea)
2018	Convener of Fermilab's working group on strategic planning for future energy frontier facilities
2018-2020	Executive member of the APS forum on International Physics
2018	Chair of the g-2 experiment shutdown planning review committee
2018	Technical panel expert for MATHUSLA experiment
2018-2019	Chair of the Fermilab's Particle Physics Division Strategic Advisory Group
2019-2020	Member and Chair of DPF nominations committee
2019-now	Member of INFN (Italy) Technical Council
2020	Chair of Gamow award selection committee
2019-2022	Liaison between Energy Frontier and Accelerator Frontier for 2021 Snowmass planning process
2019-now	Member of CERN's review committees for HL-LHC experiments upgrades
2019-now	Executive member of RIKEN BNL Research Center management team
2021	Chair of invited QCD session at April APS meeting
2021	Reviewer if India-CMS HL-LHC construction proposal
2021	Chair of DUNE-SAND external review committee
2021-2022	Member of the International Advisory Committee for ICHEP 2022 Conference
2022-now	Member of the International Advisory Committee for DIS 2022 Conference
2022-now	Referee for Physics G journal
2022	Sorter of abstracts for DPF session at 2022 APS meeting
2022-2023	Chair of NSF Committee of Visitors Review for Elementary Particle Physics Program
2022-now	Member of J-PARC/KEK International Advisory Committee
2022-now	Member of External Advisory Board of the International Center for Quantum-field Measurement Systems for Studies of the Universe and Particles at KEK

Ten principal publications

1. "On using CF₄ as working gas for drift tubes", Nucl. Instrum. Methods in Phys. Res. A306 (1991) p.200.

2. "Cross section of backward proton production in 40 GeV/c $\pi(k, \bar{p})$ -A interactions", with Antipov Yu. M. et al., Yad. Fiz. 53 (1991) p.439. Nuclear Physics A536 (1992) p.637.
3. "Observation of the top quark", with DØ collaboration, Phys. Rev. Lett. 74, 2632 (1995).
4. "Small Angle J/Psi Production in ppbar Collisions at $\sqrt{s}=1.8\text{TeV}$ ", with DØ collaboration, Phys. Rev Lett. {82} 35 (1999).
5. "An Improved Measurement of the Top Quark Mass", with DØ collaboration Nature {429}, 638 {2004}.
6. "Direct Limits on the B_s^0 Oscillation Frequency", with DØ collaboration, Phys. Rev. Lett. {97}, 021802 (2006).
7. "The Upgraded DØ Detector", with DØ collaboration, Nucl. Instrum. Methods in Phys. Res. A 565, 463 (2006).
8. "Measurement of the W boson mass with the D0 detector", with DØ collaboration, Phys. Rev Lett. 108, 151804 (2011).
9. "Evidence for a particle produced in association with weak bosons and decaying to a bottom-antibottom quark pair in Higgs boson searches at the Tevatron" with CDF and DØ Collaborations, Phys. Rev. Lett. 109, 071804 (2012).
10. "Tevatron Greatest Hits" with C. Vellidis, 2022 Rep. Prog. Phys. 85 116201.

Publications, Preprints, Notes and Conferences, Workshops, Schools Proceedings

I am author of over 500 papers published in referenced journals.

I am author of over 200 Preprints, Notes, Conferences/Workshops/Schools Proceedings.

Full lists are available upon request.

Talks at major Conferences

Multiple presentations at BNL and Fermilab PACs, P5 committee meetings, Fermilab Users Meetings, Fermilab's and D0 reviews, DOE, NSF and multiple seminars at D0 Universities on D0 physics results, seminars and colloquiums at multiple universities about past, present and future of particle colliders.

"US High Energy Physics Program", presentation at the HEP lab Directors round table at ICHEP 2022 conference

"Ultra-fast hadron calorimetry", talk at International Conference on High Energy Physics, Seoul, Korea, 2018

"Tevatron heavy flavor results", talk at International Conference on High Energy Physics, Seoul, Korea, 2018

“Tevatron Legacy”, invited talk at 2017 Large Hadron Collider symposium, Shanghai, China, 2017

“Fermilab program and plans”, invited talk at Colliding Beams Instrumentation Conference, Novosibirsk, Russia, 2017

“Tevatron Legacy Results”, invited talk at the Russian Academy of Sciences meeting dedicated to JINR 60th anniversary, Dubna, Russia, 2016

“Tevatron Physics Results Highlights”, review talk at 2015 Higgs Hunting Workshop, Paris, 2015

“Summary of Moriond QCD 2013 Conference”, summary talk, La Thuile, Italy March 2013

Opening talk “Hadron Colliders and Hadron Colliders Physics” at the 23rd Hadron Collider Physics Symposium, November 2012, Kyoto, Japan

"Tevatron Results and Future Prospects", Russian Academy of Sciences meeting invited talk, Moscow 2009

“Closing in on the Higgs Particle with the Tevatron”, American Association for Advancement of Science, Chicago 2009

"Highlights from the Tevatron Experiments", Russian Academy of Sciences meeting invited talk, Moscow 2008

“Measurement of Top Quark Pair Production at D0”, American Physical Society Meeting, Dallas, 2006

"Recent Tevatron Results for Top and Higgs Physics", Plenary talk at ICHEP 2004, Beijing, 2004

"Forward Muon System for D0 detector", IEEE Conference, Norfolk, 2002

"High Energy Experiments at the Energy Frontier at the Fermilab Collider", Sakharov Conference, Moscow 2002

"The D0 Detector Upgrade", Vienna Conference on Instrumentation, Vienna, 2001

"Physics Reach of the D0 Experiment in the Next Tevatron Collider Run", Hadron 98 conference, Crimea 1998

"Results on B physics from D0", International Conference on Elastic and Diffractive Scattering, Seoul, 1997

"Fermilab Tevatron and Collider Detectors Upgrade", Structure of Particles and Nuclei and their Interactions Conference, Tashkent 1997

"D0 muon Trigger", IEEE Conference, San Francisco 1995

"Recent D0 Results", International School on Particles and Cosmology, Baksan 1995

Awards

2004 – Fermilab employee recognition award for leading successful startup of the D0 experiment in Run II

2008 – Czech Technical University Medal for achievements in high energy physics and development of international cooperation

2010 – Fellow of the American Physical Society

2011 – Fermilab employee recognition award for leading the D0 collaboration and successful completion of the experiment data collection and data processing

2016 - Physical Review B journal referee award

2017 – “Best Article of 2015” award from Physics Uspehi journal for the review paper “The top quark (20 years after its discovery)”

2019 – recipient of 2019 European Physical Society award for the discovery and studies of the top quark by the D0 and CDF collaborations