

## Alexandre Vaniachine

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### **Education:**

M.S., Moscow Engineering Physics Institute, 1977  
Ph.D., Moscow Engineering Physics Institute, 1981

### **Professional Employment:**

2001-present Software Engineer/Computer Scientist, Argonne National Laboratory  
1989–2001 Guest/visitor appointments at CERN, SSCL, BNL, LBNL and KTH, Stockholm  
1990–1991 Postdoctoral Research Associate, University of Pittsburgh  
1980–2001 Research Associate, Moscow Engineering Physics Institute

### **Awards, Memberships, and Professional Service:**

- Co-PI of ASCR-funded project “Next Generation Workload Management and Analysis System for Big Data” (2012-2015)
- Member, Planning Group for U.S. ATLAS Computing R&D proposals, 2011-
- Member, ATLAS Computing Management Board (2006-2010)
- Coordinator, ATLAS Database Services/Operations (2004-2010)
- Talks on behalf of ATLAS Collaboration (IEEE NSS/MIC 2011, NEC2007 and ACAT02)
- Invited talks at international conferences and workshops (12 since 2007)
- Talk at ATLAS Weekly Meeting, 2011; plenary talk at ATLAS Overview Week, 2007, two plenary talks at ATLAS Software and Computing Workshops
- Member, Advisory Committee, International Conference on Distributed Computing and Grid Technologies in Science and Education, 2008-
- Convener, International Conference on Computing in High Energy and Nuclear Physics, 2007
- Panelist, Plenary Session, WLCG Collaboration Workshop, 2007
- Member, Program Committee, International Symposium on Nuclear Electronics and Computing, 2005-
- Reviewer, *IEEE TNS*, *J Physics*, *J Inst* and proposals for funding (SBIR, LDRD, etc)
- PI and co-PI of three R&D projects on database technologies for Grid computing (2005-2008)
- Fellow, Royal Swedish Academy of Sciences, Stockholm, Sweden, 1995

### **Selected Research Accomplishments:**

2012 Completed reprocessing of more than two petabytes of ATLAS 2012 data on the Grid  
2011 Led to completion reprocessing of more than petabyte of ATLAS 2011 data on the Grid  
2009 Solved database access problem that blocked ATLAS data reprocessing on the Grid  
2006 Pioneered applications of Virtual Machines for HEP computing  
2005 Proposed data replication technology for scalable database access on the Grid  
2003 Developed database software for ATLAS detector description parameters  
2002 Introduced data transformation concept that was adopted for ATLAS data processing  
2001 Published the paper on pioneering use of a novel approach for high-throughput computing, which is now adopted by all LHC experiments as “pilot” jobs

### Selected Publications (Alexandre Vaniachine):

1. PanDA: Next Generation Workload Management and Analysis System for Big Data  
De K, Klimentov A, Panitkin S, Titov M, Vaniachine A, Wenaus T, Yu D, Záruba G  
2012 *ATLAS Note* ATL-SOFT-SLIDE-2012-702.
2. Advancements in Big Data Processing in the ATLAS and CMS Experiments  
Vaniachine A V on behalf of the ATLAS and CMS Collaborations  
2012 *ATLAS Note* ATL-SOFT-PROC-2012-068.
3. ATLAS Grid Data Processing: system evolution and scalability  
Golubkov D, Kersevan B, Klimentov A, Minaenko A, Nevski P, Vaniachine A and Walker R  
for the ATLAS Collaboration  
2012 *J. Phys.: Conf. Ser.* **396** 032049.
4. ATLAS detector data processing on the Grid  
Vaniachine A V for the ATLAS Collaboration  
2011 *IEEE Nuclear Science Symposium and Medical Imaging Conference*, p. 104.
5. Scaling up ATLAS Database Release Technology for the LHC Long Run  
Borodin M, Nevski P and Vaniachine A for the ATLAS Collaboration  
2011 *J. Phys.: Conf. Ser.* **331** 042004.
6. Petaminer: Efficient navigation to petascale data using event-level metadata  
Hamill P, Cranshaw J, Malon D, and Vaniachine A  
2008 *PoS ACAT08*, 071.
7. Development, deployment and operations of ATLAS databases  
Vaniachine A and von der Schmitt J  
2008, *J. Phys. Conf. Ser.* **119** 072031.
8. Blueprint and First Experiences Bridging Hardware Virtualization and Global Grids for  
Advanced Scientific Computing: Designing and Building a Global Edge Services Framework  
(ESF) for OSG, EGEE, and LCG  
Rana A S, Keahey K, Freeman T, Sotomayor B, Foster I, Wurthwein F, Vaniachine A  
2006 *Nuclear Science Symposium Conference Record, IEEE* Vol. 1, p. 627.
9. Advanced Technologies for Distributed Database Services Hyperinfrastructure  
Vaniachine A, Malon D and Vranicar M  
2005, *Int. J. of Mod. Phys. A* **20** (16):3877.
10. Primary Numbers Database for ATLAS Detector Description Parameters  
Vaniachine A, Eckmann S, Malon D, Nevski P and Wenaus T  
2003, *Computing in High Energy and Nuclear Physics (CHEP03): Proc. of the Int. Conf. –  
eConf C030324, MOKT006*.
11. Data Challenges in ATLAS Computing  
Vaniachine A for the ATLAS collaboration  
2003, *Nucl. Instrum. Meth.* **A502**:446.
12. Bilevel Architecture for High-Throughput Computing  
Nevski P, Vaniachine A and Wenaus T  
2001 *Computing in High Energy and Nuclear Physics (CHEP 2001): Proc. of the Int. Conf.,  
Beijing, China*, p. 696.