Curriculum Vitae

Personal information

SERGEY ALYAEV

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Nationality(-ies) Russia

Gender Male

Personal description

Sergey Alyaev grew up in Saratov (Russia) where he finished diploma in mechanics at the Saratov State University. He moved to Bergen in 2008 to pursue education in applied mathematics and completed MSc and PhD degrees at University of Bergen. Currently Alyaev works as a researcher at IRIS where he applies mathematical models to solve problems of drilling and well modelling.

Occupational field **Research in applied mathematics**

Responsibilities
– Conducting research, writing reports and presenting results of projects
– Networking, securing funding and writing applications for grants
– Software development in C#

Research interests
– Fluid-flow modeling
– Multi-scale methods and homogenization
– Inverse modelling and optimization

Work Experience

2013 ⟶ International Research Institute of Stavanger, Bergen, Norway.
- PressureAhead: Reduced uncertainty in overpressures and drilling window prediction ahead of the bit (DrillWell). [3]
  - Analysis of indirect measurement to predict overpressures and related uncertainties
  - RT-Hub: drilling data acquisition and aggregation system.
- Pre-project for CFD-based calculation and risk analysis for medical applications. [6]
- DrillScene. Improvement of usability of drilling monitoring system. (Sekal)
- Drilling solutions for improved recovery (DrillWell). [8]
  - Development of a complete ensemble-based geosteering workflow
  - Software integration
- Advanced drilling fluid processing. [9]
  - Development of simulator of top side processing equipment
  - Modelling for drilling fluids processing advisory.
  - Drilling fluid composition optimization

2010 – 2013 PhD Research Fellow, University of Bergen, Norway.

2009 – 2010 Summer student, Statoil Research Center, Bergen, Norway.
- Heuristics-based modeling of fracture generation and growth in oil reservoirs (C++).
- 3D visualization of the modeling results.

2008 – 2008 Intern, Mirantis/Grid Dynamics, Saratov, Russia. Investigation of databases for cloud computing. (Java)

Education and training

2010 – 2016 Ph.D., Applied Mathematics, University of Bergen, Norway. [7]
- Mathematical analysis of fractal structure formation in freezing brine. (Matlab) [4]
- Semi-analytical solution for micro-mechanics of agglomeration forced by capillary bridging. (Maple) [2]
- Development and analysis of control volume HMM for non-linear flows in porous media. (Python) [5],[1],[10]

2008 – 2010 M.Sc., Applied Mathematics, University of Bergen, Norway. Credits: 150. Grade: A. [11]

2004 – 2010 Specialist Diploma, Mechanics, Saratov State University, Russia. With honors. Major in Mechanics of gas liquid and plasma. [12]

Mother tongue(s)	**Russian**
Other languages(s)	English, Norwegian
Teaching activities	
2010	Lecturer - Special topics in homogenization, Department of Mathematics, University of Bergen, Norway
Professional membership	Society of Petrophysicists and Well Log Analysts (SPWLA)
Publications	Journal Articles
Alyaev S., Keilegavlen E., and Nordbotten J.M. (2014)	[1] **Analysis of control volume heterogeneous multiscale methods for single phase flow in porous media,** Multiscale Modeling & Simulation
Balakin B.V., Alyaev S., Hoffmann A.C., and Kosinski P. (2013)	[2] **Micromechanics of agglomeration forced by the capillary bridge: the restitution of momentum,** AIChE Journal
Other publications	
Suter E., Alyaev S., and Daireaux B. (2017)	[3] **RT-Hub: next generation real-time data aggregation while drilling,** in First EAGE Workshop on Pore Pressure Prediction
Alyaev S., Keilegavlen E., Nordbotten J.M., and Pop I.S. (2016)	[4] **Fractal structures in freezing brine,** submitted to Journal of fluid mechanics
Alyaev S., Keilegavlen E., and Nordbotten J.M. (2016)	[5] **Multiscale simulations of non-linear flows in porous media,** submitted to Water resources research
Alyaev S., Bogdanova A., Farbu E.H., and Balakin B.V. (2016)	[6] **Elucidating empty nose syndrome with CFD,** in VCBM & MedViz
Alyaev S. (2016)	[7] **Multiscale analysis of selected problems in fluid dynamics,** PhD thesis. University of Bergen
Luo X., Eliasson P., Alyaev S. et al. (2015)	[8] **An Ensemble-Based Framework for Proactive Geosteering,** in SPWLA 56th Annual Logging Symposium
Iversen F., Daireaux B., Alyaev S. et al. (2015)	[9] **Towards Closing the Loop on Drilling Fluid Management Control,** in SPE Bergen One Day Seminar
Alyaev S., Keilegavlen E., and Nordbotten J.M. (2012)	[10] **Multiscale simulation of non-Darcy flows,** in Computational Methods in Water Resources, CMWR XIX
Alyaev S. (2010)	[11] **Adaptive Multiscale Methods Based on A Posteriori Error Estimates,** Master's thesis. University of Bergen
Alyaev S., and Antonenko E.V. (2008)	[12] **Influence of non-uniformity of a thin-walled cylinder on axial critical forces,** Mathematics. Mechanics. (Collection of scientific papers). In Russian