Andrei Rykhlevskii

CONTACT INFORMATION

Graduate Research Assistant
University of Illinois, Urbana-Champaign
Nuclear, Plasma, and Radiological Engineering

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RESEARCH INTERESTS

Molten Salt Reactors physics, neutron transport, Monte Carlo, multiphysics simulation of advanced reactors, online reprocessing simulation, validation and verification, high performance computing

PHD

University of Illinois at Urbana-Champaign, NUCLEAR ENGINEERING **Aug 2016 – Present**

- Multiphysics model of load-following Molten Salt Reactor
- Advisor: Professor Kathryn D. Huff

MSC

University of Illinois at Urbana-Champaign, NUCLEAR ENGINEERING **Aug 2016 – May 2018**

- Advanced online fuel reprocessing simulation for thorium-fueled Molten Salt Breeder Reactor
- Advisor: Professor Kathryn D. Huff

MSC

Financial University - Moscow, Russia, FINANCIAL MANAGEMENT **Oct 2011 – Mar 2014**

- Using stock market tools for IT-industry investments
- Advisor: Professor Svetlana Grishkina

BSC

Bauman Moscow State Technical University,NUCLEAR ENGINEERING **Sep 2004 – Jun 2010**

- Calculating structural materials activation for VVER-1200 decommissioning

RESEARCH EXPERIENCE

University of Illinois at Urbana-Champaign, Urbana, IL
Graduate Research Assistant, Advanced Reactors and Fuel Cycles Group **Aug 2016 – Present**

- Neutronic calculations for Molten Salt Reactors using Monte-Carlo code Serpent.
- Molten Salt Reactors online reprocessing simulation.
- Creating model of MSBR for multiphysics environment MOOSE.
- Nuclear Data libraries generation using Serpent and SCALE.

Oak Ridge Natinal Laboratory, Oak Ridge, TN
Reactor Physics Intern **May 2018 – Aug 2018**

- Reactor Physics modeling of various Fast Spectrum Molten Salt Reactors.
- Online separation and feeds implementation.
- Fuel Cycle Performance analysis in comparison with Sodium-cooled fast Reactors.

JSC OKB GIDROPRESS (State Atomic Energy Corporation "ROSATOM"), Russia
Lead Engineer **Dec 2015 – Jul 2016**
Extending Nuclear Power Plants (NPP) lifecycle technology.

BUKO Ltd, Podolsk, Russia **Sep 2014 – Dec 2015**
Financial analyst
Developed and applied trading robots (C#, VB) for NYSE, LSE, CME, CBOT, GLOBEX and ICE.

Svyaz Standart Ltd, Podolsk, Russia **Feb 2012 – Aug 2014**
Chief Technology Officer
Designed and managed Internet Service Provider (ISP) metro networks.

JSC OKB GIDROPRESS (State Atomic Energy Corporation "ROSATOM"), Russia
Nuclear Engineer **Nov 2009 – Feb 2012**

- Performed neutronics calculations for expending operation period of Balakovo and Kola NPPs.
- Wrote the chapter about decommissioning for the Preliminary Safety Analysis Report (PSAR) of Belene NPP, Bulgaria.
- Performed numerous verifying computations for final state certification of KATRIN-2.0 code.
- Created a Matlab script for processing neutron flux data collected from NPPs.

Honors and Awards

American Nuclear Society, John and Muriel Landis Scholarship	**2017–2018**
Podolsk city council award for development of innovative entrepreneurship in Podolsk	**2014**
Graduated FU with high distinction (highest graduation honor)	**2014**
Graduate scholarship for excellent students, FU	**2013**
Research achievement award, OKB GIDROPRESS	**2011**
Academic scholarship for distinguished student, BMSTU	**2008–2010**
Student Society leadership scholarship, BMSTU	**2004–2010**

Journal Publications

[1] **Rykhlevskii, A.**, Bae, J.W., Huff, K. "Modeling And Simulation of Online Reprocessing in the Molten Salt Breeder Reactor.", **Annals of Nuclear Energy**, `https://doi.org/10.1016/j.anucene.2019.01.030`, Jun. 2019.

[2] Lindsay, A., Ridley, G., **Rykhlevskii, A.**, Huff, K. "Introduction to Moltres: an Application for Simulation of Molten Salt Reactors", *Annals of Nuclear Energy*, vol. 114, Pages 530 - 540, 2018. `doi.org/10.1016/j.anucene.2017.12.025`, Apr. 2018.

Refereed Conference Proceedings

[3] **Rykhlevskii, A.**, Lindsay, A., Huff, K. "Full-Core Analysis of Thorium-Fueled Molten Salt Breeder Reactor using the SERPENT 2 Monte Carlo code" **Transactions of the American Nuclear Society Winter Conference.** Washington, DC, United States, 2017.

[4] **Rykhlevskii, A.**, Lindsay, A., Huff, K. "Online Reprocessing Simulation for Thorium-Fueled Molten Salt Breeder Reactor," **Transactions of the American Nuclear Society Winter Conference.** Washington, DC, United States, 2017.

[5] **Rykhlevskii, A.**, Tsofin, V. "Comparing fast neutron transfer calculations within code package KATRIN-2.0 across various options for describing the core of VVER-440" **Scientific and technical conference of young specialists.** Podolsk, Russia. March, 2011.

Refereed Conference Abstracts

[6] **Rykhlevskii, A.**, Betzler, B.R., Bae, J.W., Huff, K. "Fuel Cycle Performance of Fast Spectrum Molten Salt Reactor Designs" (poster) **Oak Ridge National Laboratory Nuclear Engineering Science Laboratory Synthesis Poster Session.** Oak Ridge, TN, United States, 2018.

[7] **Rykhlevskii, A.**, Huff, K. "Computational Tools for Advanced Molten Salt Reactor Simulation", **Blue Waters Symposium**, Sun River, OR, June 2018.

Invited Talks

U. Illinois, Nuclear, Plasma, & Radiological Engineering. *Seminar.* **Apr 10, 2018**

Engineering Teaching

University of Illinois at Urbana-Champaign **Nov 29, 2017**
Nov 9, 2018

Dept. of Nuclear, Plasma, and Radiological Engineering
NPRE 247, Modeling Nuclear Energy System
UNIX Shell, Basic Scripting, Serpent usage, Monte Carlo methods

Undergraduate Researchers

Name	Degree - Year	Role
Jin Whan Bae	BS - 2017	Mentor
Louis Kissinger	BS - (est. 2019)	Mentor

Scientific Computing Skills

Languages	Python, bash/csh, C++, FORTRAN, VB
Build Systems	make, CMake
Version Control	git
Other Tools	Serpent, SCALE, MOOSE, MathCAD, MATLAB, Octave, ANSYS, PyNE, Cyclus

Other University Service

Hack Mentor, Hack Illinois **2017**