

Zoltán PERKÓ

Personal Data

EMAIL | zperko@mgh.harvard.edu
NATIONALITY | Hungarian

Current Occupation

FEB 2015 | Post-doctoral Fellow at Massachusetts General Hospital, Department of Radiation Oncology, Physics Research Group / Harvard Medical School

Education

JAN 2015 | PhD in REACTOR PHYSICS (with Cum Laude),
Delft University of Technology, Delft, The Netherlands
Thesis: “Sensitivity and Uncertainty Analysis of Coupled Reactor Physics Problems - Method Development for Multi-Physics in Reactors”

JUN 2010 | MSc in ENGINEERING PHYSICS, *Specialization in Nuclear Techniques*
Budapest University of Technology and Economics (BME), Budapest, Hungary
Thesis: “Investigating the Fuel Cycle and Transmutational Capabilities of Gas Cooled Fast Reactors”
GRADE: Excellent

JULY 2004 | Leaving Certificate, *Special Mathematics class*
Vajda János Secondary School, Keszthely, Hungary
Grade: Excellent, graduated with Special Vajda Plaque

Work Experience

JUL 2014 - OCT 2014 | Post-doctoral researcher at **Delft University of Technology, Faculty of Applied Sciences, RST, NERA**, Delft
Working in European FP7 ESNI+ project, performing uncertainty quantification of transients in the ALLEGRO demonstrational Gas Cooled Fast Reactor.

JUL 2010 - JUNE 2014 | PhD researcher at **Delft University of Technology, Faculty of Applied Sciences, RST, NERA**, Delft
Developed numerical methods for sensitivity and uncertainty analysis of multi-physics problems (adaptive Polynomial Chaos and adjoint techniques), supervised BSc and MSc students

OCT 2008 - JUN 2010 | Assistant teacher at **Budapest University of Technology and Economics, Nuclear Technology Institute**, Budapest
Experimental nuclear physics (2 semesters) and reactor physics (2 semesters) courses.

SEP 2008 - DEC 2008 | Assistant researcher at **Budapest University of Technology and Economics, Nuclear Technology Institute**, Budapest
Performed activation calculations for decommissioning purposes with MCNPX.

Scholarships and Awards

2014	ENEN PhD Prize, 8 th PhD event, IYNC 2014, Burgos, Spain
2009 & 2010	Honorable Student of the Faculty of Natural Sciences, BME
2009	Erasmus Scholarship for guest research at Delft University of Technology
2008 & 2009	1 st prize at the Student's Scientific Conference, Nuclear Technology section, Faculty of Natural Sciences, BME

Languages

ENGLISH	Fluent
GERMAN	Intermediate Knowledge
DUTCH	Basic Knowledge
HUNGARIAN	Native language

Publications

Journal papers

- Z. Perkó, et al., “Fast and Accurate Sensitivity Analysis of IMPT Treatment Plans Using Polynomial Chaos Expansion“, submitted to *Physics in Medicine and Biology*, (2015)
- Z. Perkó, et al., “Core Neutronics Characterization of the GFR2400 Gas Cooled Fast Reactor”, *Progress in Nuclear Technology*, **83**, pp. 460-481, (2015), <http://dx.doi.org/10.1016/j.pnucene.2014.09.016>
- Z. Perkó, D. Lathouwers, J. L. Kloosterman, T. van der Hagen, “Ambiguities in the Sensitivity and Uncertainty Analysis of Reactor Physics Problems Involving Constrained Quantities”, *Nuclear Science and Engineering*, **180** (3), pp. 345-377, (2015), dx.doi.org/10.13182/NSE14-17
- Z. Perkó, D. Lathouwers, J. L. Kloosterman, T. van der Hagen, “Large Scale Applicability of a Fully Adaptive Non-Intrusive Spectral Projection Technique: Sensitivity and Uncertainty Analysis of a Gas Cooled Fast Reactor Transient”, *Annals of Nuclear Energy*, **71**, pp. 272-292, (2014)
- Z. Perkó, L. Gilli, D. Lathouwers, J. L. Kloosterman, “Grid and basis adaptive polynomial chaos techniques for sensitivity and uncertainty analysis”, *Journal of Computational Physics*, **260**, pp. 54-84, (2014)
- Z. Perkó, D. Lathouwers, J. L. Kloosterman, T. van der Hagen, “Adjoint-based sensitivity analysis of coupled criticality problems”, *Nuclear Science and Engineering*, **173** (2), pp. 118-138, (2013)
- Z. Perkó, J.L. Kloosterman, S. Fehér, “Minor Actinide Transmutation in GFR600”, *Nuclear Technology*, **177** (1), pp. 83-97, (2012)

Conference papers

- Z. Perkó, J. L. Kloosterman, D. Lathouwers, T. van der Hagen, "Constrained quantities in uncertainty quantification: Ambiguity and Tips to follow", *International Conference On the Physics of Reactors 2014, Advances in Reactor Physics, PHYSOR 2014*, Kyoto, Japan (2014)

- Z. Perkó, L. Gilli, D. Lathouwers, J. L. Kloosterman, “Adaptive polynomial chaos techniques for uncertainty quantification of a Gas Cooled Fast Reactor transient”, *International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, M&C 2013*, pp. 1084-1095, (2013)
- K. Mikityuk, Z. Perkó, G. Girardin, “Reactivity effect of steam/water ingress in Generation-IV Gas-Cooled Fast Reactor Core”, *International Conference on Fast Reactors and Related Fuel Cycles: Safe Technologies and Sustainable Scenarios, FR13*, Paris, France (2013)
- Z. Perkó, J. L. Kloosterman, D. Lathouwers, “Sensitivity analysis of coupled criticality calculations”, *International Conference on the Physics of Reactors, Advances in Reactor Physics to Power the Nuclear Renaissance, PHYSOR 2012*, Knoxville, TN, US, (2012)
- Z. Perkó, S. Fehér, J. L. Kloosterman, S. Christie, “Recycling of VVER Minor Actinides in a Gas Cooled Fast Reactor”, *International Conference on the Physics of Reactors, Advances in Reactor Physics to Power the Nuclear Renaissance, PHYSOR 2010*, Pittsburg, OH, US, (2012)

Conference posters

- M. S. Hoogeman, S. R. van der Voort, Z. Perkó, et al., “Fast and Accurate Sensitivity Analysis of IMPT Treatment Plans Using Polynomial Chaos Expansion“, PO-0892, *3rd ESTRO Forum, ESTRO 2015*, Barcelona, Spain, (2015)
- Z. Perkó, J. L. Kloosterman, S. Fehér, “Minor Actinide Transmutation in a Gas-Cooled Fast Reactor“, *12th Information Exchange Meeting on Actinide and Fission Product Partitioning and Transmutation*, Prague, Czech Republic, (24-27 September, 2012)

Project reports

- Z. Perkó, K. Peers, R. Stainsby, et. al., “GFR Severe Accident Analysis”, Deliverable D1.3-8, GoFastR project, February (2013)
- K. Peers, R. Stainsby, Z. Perkó, et. al., “GFR Severe Accident Model Development”, Deliverable D1.3-4, GoFastR project, January, (2013)
- Z. Perkó, J. L. Kloosterman, C. Poette, et. al., “Contribution to the Final Report on GFR Core Performance & Uncertainties”, Deliverable D1.1-15, GoFastR project, September (2012)
- Z. Perkó, J.L. Kloosterman, C. Poette, R. Stainsby, “GFR2400 Core Neutronics and Thermal-hydraulics Characterization”, Deliverable D1.1-11, GoFastR project, March (2012)
- Z. Perkó, J. L. Kloosterman, R. Stainsby, “Student Workshop on Gas Cooled Fast Reactors - A training course”, Deliverable D6.2, GoFastR project, October (2011)