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CURRICULUM VITAE
Farrokh Khoshahval

Present Affiliation

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Academic Qualifications

Ph.D. Nuclear Engineering, Shahid Beheshti University, Iran, Sep. 2014, GPA:18.38/20.
Field of interest: Reactor Engineering.
Thesis: "PWR fuel management optimization using improved PSO and GA".

M. Sc. Nuclear Engineering, Shahid Beheshti University, Iran, Sep. 2009, GPA:17/20.
Field of interest: Neutronic and Thermal Hydraulic Codes.
Thesis: "Fuel Management Optimization of Bushehr WWER-1000 Reactor Core".

Fields of expertise

1. Neutron Detection & Nuclear Instrumentation
2. Neutronic codes
3. In core fuel management
4. Optimization methods such as PSO (Particle Swarm Optimization), GA (Genetic Algorithm), SA (Simulated Annealing), BBO (Biogeography Based Optimization), ABC (Artificial Bee Colony), HNN (Hopfield Neural Network)
5. Teaching Optimization Methods at Shahid Behesht University
6. Engineering Program Education
7. Teaching Nuclear Engineering Courses

Membership of Professional Societies

1- Reviewer of Annals of Nuclear Energy Journal.

2- Reviewer of Progress in Energy Journal.
3- Reviewer of Hindawi Journal
4- Reviewer of Nuclear Engineering & Design Journal
5- Reviewer of Simulation Modeling Practice and Theory (SIMPAT) journal

Teaching Experience

University	Period	Courses taught	Comment
Shahid Beheshti University	2009-2015	• Optimization Methods	Teacher
Shahid Beheshti University	2009 - 2014	• Reactor Physic-1 • Reactor Physic-2 • Cross section	Teaching assistant

Current Research

1- Neutron Detection & Nuclear Instrumentation
2- Radiation Analysis of a Spent-Fuel Storage Cask
3- Criticality Calculation of a Spent-Fuel Storage Cask
4- Working on PSO parameters to optimize them
5- Working on parallelization of optimization methods

Previous Research

1. Inverse fuel management of PWRs using SMA algorithm
2. Evaluation and Optimization of Burnable Absorbers in Bushehr WWER-1000 Reactor
3. Review and Calculation of Kinetic Parameters of Bushehr Reactor
4. Numerical Solution of one dimensional neutron transport equation in Cartesian mode using Sn method.
5. Developing a nodal method for 2 group diffusion Equation in 2-D.
6. Temperature and Pressure calculation in the hot fuel assembly of WWER-1000 reactor using Navier Stokes Equations and comparison with the results of COBRA code.
7. Bayesian inference along Markov Chain Monte Carlo approach for PWR core loading pattern optimization
8. Analysis of current term in the transport equation and amount of scattering on the exactness in the discrete ordinates methods.
9. Determining the Best Ranges of Velocity and Delay Time of Bushehr WWER-1000 Nuclear Reactor Control Rods
10. WWER-1000 Bushehr reactor core loading pattern optimization using quantum behaved particle swarm intelligence with differential mutation operator
11. WWER-1000 in core fuel management using Perturbation Theory.
12. Investigating the performance of concrete and Iron as neutron shielding material.
13. Investigation of Small Modular Reactors (SMRs).
14. Neutronic performance of different burnable absorbers in the fuel assembly.

Other Academic Experience

Beside the mentioned activities, I have participated in some academic activities of the faculty of engineering. Some major activities are:

1 Participating in some postgraduate research work and projects.
2 Attending some seminars, workshops, and conferences that are held in the university.
3 Conducting some short courses and seminars on "Reactor in Core Fuel Management".
4 Conducting some short courses and seminars on "Optimization Methods".

Attended Training Courses, Seminar and Workshops

- International Seminar on Recent Developments in Radiation Protection, May 2013, Tehran, Iran.

- Strengthening the Role of the Regulatory Authority in Light of the Fukushima Accident. Workshop, Sept. 27 to 30, 2014.

Patent/Invention

- Energy group structure optimizer syestem in the neutron trasnport equation. Registered in Iran with No. 80888, Date, Nov. 2013.

Computer Skills

- Reactor Modelling and simulation codes, such as MCNPX, WIMS, CITATION, PARCS, ANISN, MTR-PC Package, DRAGON and DONJON codes.
- Language and complier: FORTRAN Language Programming, C^{++} and MATLAB Software
- Thermal Hydraulic Codes such as COBRA.
- Nuclear Data Processing System: Njoy code.
- Dynamic Code: Dynco
- Other PC abilities: Window platforms, MS office Package, Pspice, Orcad and Origin.

In addition, I am working full-time in neutron dynamic group of R&D of SBU near one year.

Languish Skills

- English (excellent oral and writing skills)
- Turkish (primitive level)

Selected Peer-Reviewed Journal Publications

- Khoshahval, F., Zolfaghari, A., Minuchehr, H., Sadighi, M., Norouzi, A., 2010. "PWR fuel management optimization using continuous particle swarm intelligence". Ann. of Nucl. En. 37 (10), 1263-1271.

(Top 25 Hottest Article: http://top25.sciencedirect.com/subject/energy/11/journal/annals-of-nuclear-energy/03064549/archive/28/)

- Khoshahval, F., Minuchehr, H., Zolfaghari, A., 2011. "Performance evaluation of PSO and GA in PWR core loading pattern optimization", Nucl. Eng. and Design 241, 799–808.
- Norouzi, A., Zolfaghari, A., Minuchehr, A.H., Khoshahval, F., 2011 " An enhanced integer coded genetic algorithm to optimize PWRs", Progress in nuclear energy
- Akbari, M., , Zolfaghari, A., Minuchehr , Khoshahval, F. 2012 "An investigation for an optimized neutron energy-group structure in thermal lattices using Particle Swarm Optimization" Annals of Nuclear Energy 47 (2012) 53–61
- Abbassi, M., Zolfaghari, A., Minuchehr, H., Khoshahval, F., 2012, "A PN-based approach along PSO scheme for PWR core reloading patterns optimization" Nuc. Eng. and Design 248 (2012) 206– 215.
- Akbari, M., , Zolfaghari, A., Minuchehr, H. , Khoshahval, F., 2012, "A novel approach to find optimized neutron energy group structure in MOX thermal lattices using swarm intelligence," Nuclear Engineering and Technology. 2013. Dec, 45(7): 951-960

- Khoshahval, F., Fadaei, A., 2012, "Application of a hybrid method based on the combination of GA and H.N.N for burnable poison placement". Ann. of Nucl. En. 47 (10), 62-68.
- Akbari, M., , Zolfaghari, A., Minuchehr , Khoshahval, F. 2012 "Impact assessment of upscattering on resonance calculation using improved ultrafine energy group method" Annals of Nuclear Energy 49 (2012) 114–121.
- Jamalipour, M., Gharib, M., Sayareh, R., Khoshahval, F., 2013" PWR power distribution flattening using Quantum Particle Swarm intelligence " Annals of Nuclear Energy 56 (2013) 143-150.
- Jamalipour, M., Gharib, M., Sayareh, R., Khoshahval, F., 2013"Quantum behaved Particle Swarm Optimization with Differential Mutation operator applied to WWER-1000 in-core fuel management optimization " Annals of Nuclear Energy 54 (2013) 134-140.
- Khoshahval, F., Zolfaghari, A., Minuchehr, H., 2014 "A new method for multi-objective in core fuel management optimization using biogeography based algorithm." Annals of Nuclear Energy 73 (2014) 294-303.
- Khoshahval, F., Zolfaghari, A., Minuchehr, H., 2014" Effect of including corner point fluxes on the pin power reconstruction using nodal point flux scheme" Annals of Nuclear Energy 69 (2014) 25-36.
- Khoshahval, F., Zolfaghari, A., Minuchehr, H., 2014" A new hybrid method for multi-objective fuel management optimization using parallel PSO-SA'' Progress in Nuclear Energy 76 (2014) 112-121.
- Khoshahval, F., Ahdavi, A, 2016 "Determination of the maximum speed of WWER-1000 nuclear reactor control rods" Annals of Nuclear Energy 87 (2016) 58–68.
- Khoshahval, F., Foroutan, S, Zolfaghari, A., Minuchehr, H., 2016 . Evaluation of burnable absorber rods effect on neutronic performance in fuel assembly of WWER-1000 reactor

Selected Peer-Reviewed Conference Publications

- Calculation of electrical field of power transmission lines, Iranian electrical engineering conference 2009, Zanjan, Iran.

- Khoshahval, F., Zolfaghari, A., Minuchehr, H., Loading pattern optimization of the first cycle of the Bushehr WWER-1000 reactor, Iranian's Nuclear Conference, 2008, Gorgan, Iran.

- Zolfaghari, A., Minuchehr, H., Khoshahval, F., Norouzi A., Makarachi P.," PWR Nuclear Power Plants Fuel Management Optimization" Proceedings of the 17th International Conference on Nuclear Engineering, ICONE17, July 12-16, 2009, Brussels, Belgium.

- Khoshahval, F., Zolfaghari, A., Sadighi, M., PSO algorithm as a tool for fuel management optimization of PWRs, Iranian's Nuclear Conference, 2009, Gheshm, Iran.

- Khoshahval, F., Zolfaghari, A., Sadighi, M., Role of current term in the transport equation and the value of scattering on the accuracy of Sn method , Iranian's Nuclear Conference, 2011, Yazd, Iran.

- Noori, E., Zolfaghari, A., Minuchehr, H., Khoshahval, F., Fuel management using inverse method by SMA algorithm, Iranian's Nuclear Conference, 2011, Yazd, Iran.

- Rezaei, S., Zolfaghari, A., Khoshahval, F., Calculation of neutron generation time using direct and 1/v insertion method in the WWER-1000 reactor, Iranian's Nuclear Conference, 2011, Yazd, Iran.

- Salari, F., Gharib, M., Sayareh, R., Khoshahval, F., Feasibility study of construction a research reactor using spent HEU fuels of TRR, 2015, Yazd, Iran.

- Farrokh Khoshahval, Deokjung Lee,. Selection of objective function in the multi-objective fuel management optimization. 37th Annual conference of the Canadian Nuclear Society and 41th Annual CNS/CAN Student Conference Sheraton of the Falls Hotel, Niagara Falls, ON, Canada, 2017 Jun 4-7.

- F. Khoshahval, M. Park, J. Park, J. Choe, P. Zheng, H.C. Shin, J. E. Jung, H.S. Lee, Deokjung Lee, Self-powered neutron detectors calculations using RAST-K v2.0 code. 37th Annual conference of the Canadian Nuclear Society and 41th Annual CNS/CAN Student Conference Sheraton of the Falls Hotel, Niagara Falls, ON, Canada, 2017 Jun 4-7.