Curriculum Vitae

Jinsu Park

T. +82-52-217-2972 / H.P. +82-10-9364-1041 / jinsu@unist.ac.kr

AFFILIATION

Combined Master's and Ph.D Program
Ulsan National Institute of Science & Technology (UNIST)
UNIST-gil 50, Ulsan Metropolitan City, Republic of Korea, 44919

EDUCATION

Graduate
- Nuclear Science and Engineering
- Ulsan Nation Institute of Science and Technology, Korea, 2016.9~Now

Undergraduate
- 1st track: Nuclear Science and Engineering
- 2nd track: Physics
- Ulsan Nation Institute of Science and Technology, Korea, 2012.2~2016.8

WORK EXPERIENCE

- Nodal Code Development
  - RAST-K v2.0 and v3.0 development
  - Multi-Scale Multi-Physics Coupling
- VHTR Core Benchmark
  - Verification of McCARD and DeCART/CAPP code system with HTTR and PMR-200 benchmark
- Depletion calculation analysis
  - VERA depletion benchmark sensitivity test with SERPENT2, CASMO-5, MCODE, MCNP6, McCARD, UNIST inhouse MOC and MC codes
- Coolant void reactivity analysis
  - Physics study of CVR analysis
  - Optimization study of CANDU lattice
- Small Modular Sodium-cooled Fast Reactor Design
  - Small modular reactor
  - Sodium-cooled fast reactor
  - Breed-and-burn strategy
  - MC^2-3, TWODANT, REBUS-3, PERSENT
- Monte-Carlo Code Development
  - Advanced geometry tracking module for PWR on MCS
  - Performance study of Monte Carlo CMFD on active cycle
- Molten Salt Breeder Reactor Analysis
  - MSR, MSBR
  - Online reprocessing

- Whole core analysis
- MCNP6, CINDER90
- Equilibrium state
- DIMPLE Benchmark
  - Two-step approach, CASMO4E, SCALE6.1/NEWT, SERPENT2, PARCS
  - One-step approach, Monte-Carlo, MCNP6, SEPRENT2
- Convergence Analysis of 2N-CMFD Method for Neutron Diffusion EVP
  - Convergence analysis
  - 2N-CMFD, 2N-ANM
  - Fourier analysis
- Internship
  - Laboratory for Reactor Physics and System Behaviour, EPFL (July, 2017)
  - Development of VHTR Department, KAERI (July, 2016)
  - Nuclear System Analysis Department, ANL (July, 2015)
  - Analysis of Reactor Transient and Stability Lab, UIUC (July, 2014)

RESEARCH INTERESTS

- Nodal code development (RAST-K v2.0 and v3.0)
- VHTR core benchmark with McCARD and DeCART/CAPP
- Effect of Monte Carlo CMFD on active cycle (Intercycle-correlation)
- Coolant void reactivity analysis of CANDU fuel lattice
- Small Modular Sodium-Cooled Fast Reactor Core Design
- Advanced Geometry Tracking Module for PWR Development on MCS
- Molten Salt Breeder Reactor Analysis
- Two-Step Modelling of the DIMPLE using CASMO4E, SCALE6.1/NEWT, SERPENT2 with PARCS
- Monte-Carlo One-Step Modelling of the DIMPLE using MCNP6 and SERPENT2
- Convergence Analysis of CMFD Method

CERTIFICATES

- Awards & Scholarship
  - Best Student Papers Award in the Reactor Physics Asia 2017 Conference (RPHA17, Aug, 2017)
  - Best Poster Prize at the 20th Pacific Basin Nuclear Conference Student Program (PBNC2016, April, 2016)
  - UNIST Excellence Award for MNE Research Internship (UNIST, September, 2015)
- Training (International)
  - CMS 2017 International Users Group Meeting hosted by Studsvik Scandpower (Lausanne, Switzerland, October, 2017)
  - Reactor Physics Asia Experiment Program (aXP) (Kyoto University Critical Assembly, January, 2017)
  - 6th International Serpent User Group Meeting (Politecnico di Milano,

September, 2016)
- Training (Domestic)
  - Hybrid OpenMP + MPI Programming Training Course, Korea Institute of Science and Technology Information (KISTI, June, 2017)
  - OCTAVE in the Cloud Tutorial, Ulsan National Institute of Science and Technology (UNIST, May, 2016)
  - 2016 McCARD workshop – Monte Carlo Challenges, Seoul National University (SNU, Feb, 2016)
  - MCNP VISED training, Daejeon (Randy, November, 2015)
  - Reactor core design training, Central Research Institute (CRI, June, 2015)
  - McCARD developer training course, Seoul National University (SNU, March, 2015)
  - STAR-CCM+ Foundation Training, CD-Adapco (CD-Adapco Korea, February, 2015)
  - Monte-Carlo Theory and MCNP Users Training, Hanyang University (HYU, July, 2014)
- Membership
  -

PUBLICATIONS
SCI Journal

1. Jinsu Park, Tae Young Han, Deokjung Lee, Hyun Chul Lee*, "VHTR Core Analysis of McCARD and DeCART with High Temperature Engineering Test Reactor Benchmark", *Annals of Nuclear Energy*, Under review (2017).
2. Eun Jeong, Jinsu Park, Hyun Chul Lee, Peng Zhang, Deokjung Lee*, "Analysis of Very High Temperature Gas-Cooled Reactor PMR-200 with DeCART/CAPP Code System", *J. Nucl. Sci. Technol.*, Under review (2017).
3. Jaerim Jang, Wonkyeong Kim, Sanggeol Jeong, Eun Jung, Jinsu Park, Matthieu Lemaire, Hyunsuk Lee, Deokjung Lee*, "Validation of UNIST Monte Carlo Code MCS for Criticality Safety Analysis of PWR Spent Fuel Pool and Storage Cask", *Annals of Nuclear Energy*, Under review (2017).
4. Jinsu Park, Hyunsuk Lee, Taewoo Tak, Ho Cheol Shin, and Deokjung Lee*, "Physics Study of CANDU Lattice with Coolant Void Reactivity Analysis," *Nuclear Engineering and Technology*, http://dx.doi.org/10.1016/j.net.2016.08.009, (2016).
5. Jinsu Park, Taewoo Tak, T. K. Kim, Jiwon Choe, Yongjin Jeong, Peng Zhang, and Deokjung Lee*, "Design Study of Long-Life Small Modular Sodium-Cooled Fast Reactor," *International Journal of Energy Research*, http://dx.doi.org/10.1002/er.3609, (2016).
6. Jinsu Park, Yongjin Jeong, and Deokjung Lee*, "Whole Core Analysis of Molten Salt Breeder Reactor with Online Fuel Reprocessing,"

International Journal of Energy Research, 39, **pp**.1673-1680, (2015).

7. Yongjin Jeong, Jinsu Park, Hyun Chul Lee, and Deokjung Lee*, "Convergence Analysis of Two-Node CMFD Method for Two-Group Neutron Diffusion Eigenvalue Problem," *Journal of Computational Physics*, 302, **pp**.239-250, (2015).

8. Yongjin Jeong, Jinsu Park, and Deokjung Lee*, "Equilibrium Core Design Methods for Molten Salt Breeder Reactor Based on Two-Cell Model," *Journal of Nuclear Science and Technology*, http://dx.doi.org/10.1080/00223131.2015.1062812, (2015).

9. Wonkyeong Kim, Jinsu Park, Deokjung Lee*, and Tomasz Kozlowski, "Comparative Neutronics Analysis of DIMPLE S06 Criticality Benchmark with Contemporary Reactor Core Analysis Computer Code Systems," *Science and Technology of Nuclear Installations*, http://dx.doi.org/10.1155/2015/180979, (2015).

International Topical Meeting

1. Jinsu Park, Peng Zhang, Hyunsuk Lee, Deokjung Lee*, "Performance Evaluation of CMFD on Inter-Cycle Correlation of Monte Carlo Simulation," RPHA17, Chengdu, Sichuan, China, August 24-25 (2017).

2. Jinsu Park, Minyong Park, Jiwon Choe, Peng Zhang, Jaerim Jang, Deokjung Lee*, "Development Status of Dynamic Reactor Nodal Computational Code RAST-K v2.0," RPHA17, Chengdu, Sichuan, China, August 24-25 (2017).

3. Matthieu Lemaire, Hyunsuk Lee, Bamidele Ebiwonjumi, Chidong Kong, Wonkyeong Kim, Yunki Jo, Jinsu Park, Deokjung Lee*, "Recent Work on Photon Transport with UNIST Monte Carlo Code MCS," RPHA17, Chengdu, Sichuan, China, August 24-25 (2017).

4. Chidong Kong, Hyunsuk Lee, Matthieu Lemaire, Wonkyeong Kim, Yunki Jo, Jinsu Park, Jiwon Choe, Bamidele Ebiwonjumi, Deokjung Lee*, "Introduction to UNIST Spent Nuclear Fuel Transportation Package Analysis Code System," RPHA17, Chengdu, Sichuan, China, August 24-25 (2017).

5. Eun Jeong, Jinsu Park, Deokjung Lee*, Hyun Chul Lee, "Validation of DeCART/CAPP Code System for VHTR Core with PMR-200 Benchmark," ICAPP 2017, Fukui and Kyoto, Japan, April 24-28 (2017).

6. Jinsu Park, Tae Young Han, Hyun Chul Lee*, Deokjung Lee, "Verification of McCARD for VHTR core with HTTR Benchmark," M&C 2017, Jeju, Korea, April 16-17 (2016).

7. Hyunsuk Lee, Wonkyeong Kim, Peng Zhang, Azamat Khassenov, Jinsu Park, Jiankai Yu, Sooyoung Choi, Hwan Soo Lee and Deokjung Lee*, "Preliminary Simulation Results of BEAVRS Three-dimensional Cycle 1 Wholecore Depletion by UNIST Monte Carlo Code MCS," M&C2017, Jeju, Korea, April 16-20 (2017).

8. Jinsu Park, Taewoo Tak, Jiwon Choe, Yongjin Jeong, T. K. Kim and

Deokjung Lee*, "Long-Life Small Modular Sodium-Cooled Fast Reactor Core Design with Breed-and-Burn Strategy," PHYSOR 2016, Sun Valley, Idaho, USA, May 1-5, 2016, on CD-ROM (2016).

9. Jinsu Park, Hyunsuk Lee, Deokjung Lee*, "Optimization of CANDU Lattice Design for Negative Coolant Void Reactivity," PBNC 2016, Beijing, China, April 5-9, 2016.

10. Jinsu Park, Yongjin Jeong, and Deokjung Lee*, "Whole Core Analysis of Molten Salt Breeder Reactor," ANFM V 2015, Hilton Head Island, SC, USA, March 29 – April 1, 2015, American Nuclear Society (2015) (CD-ROM).

11. Yongjin Jeong, Jinsu Park, and Deokjung Lee*, "Fourier Convergence Analysis of Two-Node Coarse-Mesh Finite Difference Method for Two-Group Neutron Diffusion Eigenvalue Problem", ANS MC2015, Nashville, TN, April 19 – 23, 2015, American Nuclear Society (2015) (CD-ROM).

12. Wonkyeong Kim, Jinsu Park, Deokjung Lee*, and Tomasz Kozlowski, "Comparative Study of DIMPLE Benchmark with Two-Step and Direct Modelling Approaches," ANFM V 2015, Hilton Head Island, SC, USA, March 29 – April 1, 2015, American Nuclear Society (2015) (CD-ROM).

International and Domestic Conferences

1. Farrokh Khoshahval, Minyong Park, Jinsu Park, Jiwon Choe, Peng Zhang, Ho Cheol Shin, Ji Eun Jung, Hwan Soo Lee, Deokjung Lee*, "Self-Powered Neutron Detectors Calculations Using RAST-K v2.1," 37th Annual Conference of the Canadian Nuclear Society, Niagara Falls, ON, Canada, Jun 4-7, 2017.

2. Jinsu Park, Wonkyeong Kim, Sooyoung Choi, Hyunsuk Lee, Deokjung Lee*, "Comparative Analysis of VERA Depletion Problems," Transaction of the Korean Nuclear Society Autumn Meeting, Gyeongju, Korea, October 27-28, 2016.

3. Taewoo Tak, Jinsu Park, Jiwon Choe, and Deokjung Lee,Thomas. H. Fanning, Tyler Sumner, Guanheng Zhang, and T. K. Kim, "Anticipated Transient without Scram Assessment at EOC of SM-SFR Using SAS4A/SASSYS-1," KNS Fall Meeting, Gyeongju, Korea, October 26-28 2016.

4. Jinsu Park, Hyunsuk Lee, Taewoo Tak, Deokjung Lee*, "Coolant Void Reactivity Analysis of CANDU Lattice," Transaction of the Korean Nuclear Society Spring Meeting, Jeju, Korea, May 12-13, 2016.

5. Jaerim Jang, Jinsu Park, Wonkyeong Kim, Sanggeol Jeong, Deokjung Lee*, and Kyoon-ho Cha, "Validation of UNIST Monte Carlo Code MCS for Criticality Safety Analysis," Korean Nuclear Society Spring Meeting, Jeju, Korea, May 12-13, 2016.

6. Taewoo Tak, Jiwon Choe, Yongjin Jeong, Jinsu Park, Deokjung Lee*, and T.K. Kim, "Power Flattening Study of Ultra-Long Cycle Fast Reactor

Core," Thorium Energy Conference 2015 (ThEC15), Mumbai, India, October 19-22, 2015.

7. Jinsu Park, Taewoo Tak, Jiwon Choe, Yongjin Jeong, Deokjung Lee*, and T. K. Kim, "Comparative Analysis of Small Modular Sodium-Cooled Fast Reactor Core," Proceeding of the Reactor Physics Asia 2015 (RPHA15) Conference, Jeju, Korea, September 17-18, 2015.

8. Jinsu Park, Yongjin Jeong, and Deokjung Lee*, "Molten Salt Breeder Reactor Analysis Methods," Transactions of the Korean Nuclear Society Spring Meeting, Jeju, Korea, May 6-8, 2015.

9. Jinsu Park, Yongjin Jeong, and Deokjung Lee*, "Effect of Energy Groups and Dimensions on Convergence Behavior of 2-N CMFD Method for Neutron Diffusion Equation," Transactions of the Korean Nuclear Society Spring Meeting, Jeju, Korea, May 6-8, 2015.

10. Yongjin Jeong, Jinsu Park, Hyun Chul Lee, and Deokjung Lee*, "Convergence Analysis of Two-Node CMFD Method Applied to Neutron Diffusion Eigenvalue Problem," Transactions of the American Nuclear Society Spring Meeting, San Antonio, TX, USA, June 7-11, 2015.

11. Yongjin Jeong, Jinsu Park, and Deokjung Lee*, "Advanced Equilibrium Composition Search Method for Molten Salt Breeder Reactor Based on Two-Cell Model," Transactions of the American Nuclear Society Spring Meeting, San Antonio, TX, USA, June 7-11, 2015.

12. Yongjin Jeong, Jinsu Park, Hyun Chul Lee, and Deokjung Lee*, "Convergence Analysis of Two-Node CMFD Method for Two-Group Neutron Diffusion Eigenvalue Problem", Transactions of the Korean Nuclear Society Spring Meeting, Jeju, Korea, May 6-8, 2015.

13. Wonkyeong Kim, Jinsu Park, Deokjung Lee*, and Tomasz Kozlowski, "Comparative Study of DIMPLE Benchmark with Two-Step and Direct Modelling Approaches," Transactions of the Korean Nuclear Society Autumn Meeting, Pyeongchang, Korea, October 30-31, 2014.

PATENT