



# Curriculum Vitae

## Chidong Kong

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### AFFILIATION

9<sup>th</sup> semester in Combined Master-Ph.D Program  
Ulsan National Institute of Science and Technology (UNIST)  
50, UNIST-gil, Ulsan 44919, Republic of Korea

### EDUCATION

Bachelor of Engineering  
• Major: Nuclear Engineering  
• UNIST, Ulsan, Korea, 2010.03 ~ 2013.08

### WORK EXPERIENCE

- Two-term expansion of iterative RIT methods (ongoing)
- Accuracy test of resonance treatment methods for PWR and VHTR problems
- Spent Nuclear Fuel Transportation Cask Analysis
  - MCS verification for the KN-12 transportation cask criticality analysis
  - MCS verification for the KN-12 transportation cask radiation dose rate analysis
- Gamma Transport Implementation in MCS
  - Implementation of photon's Doppler broadening module in MCS
  - Merging all photon physics modules in MCS
- Accuracy Improvement of Boron Meter
  - Development of boron meter evaluation model
  - Lifetime evaluation of boron meter
  - Performance comparison of BF<sub>3</sub> detector with boron-line and <sup>3</sup>He detectors
  - Development of new fitting functions and use of multi-detector
- Characteristics Analysis of Self-Powered Neutron Detector(SPND)
  - Development of SPND lifetime evaluation model
  - Characteristics analysis of silver(Ag) for SPND
  - Investigation of fission beta phenomena
- Development of MOC Transport Code
  - Development of MOC Solver
- Application and Improvement of Noise Analysis Method
  - Rossi-alpha, cross-correlation, power spectral density methods
  - Feynman-alpha, Feynman difference methods
  - Eight-detector mode, advanced Rossi-alpha formulation

## RESEARCH INTERESTS

- Resonance treatment method for PWR and VHTR lattice analysis
- Critical Spectrum Correction Method in Lattice Code for Cross Section Generation
- Criticality Analysis of Spent Fuel Pool/Transport Rack
- Spent Fuel Pool Criticality Safety using NUREG/CR-6361 and NUREG/CR-6698
- Accuracy Improvement of Boron Meter
- Characteristics Analysis of Self-Powered Neutron Detector(SPND)
- Method of Characteristics(MOC) Solver Development
- Noise Analysis Method for Subcriticality Measurements
- Full-analogue and non-analogue Monte Carlo simulations

## CERTIFICATES

- Membership
  - Korean Nuclear Society Student Member
- Internship (International)
  - Nuclear Development Division, OECD/NEA (France, 2016.08 ~ 2017.01)
- Training (International)
  - KUCA Experiment, Kyoto University (Osaka, 2017)
  - MeV 2014, Idaho State University (Idaho, 2014)
  - Nuclear Fuel Cycle Education, Tohoku University (Tohoku, 2014)
  - KUCA Experiment, Kyoto University (Osaka, 2013)
  - Korea-Japan Joint Summer School, Kyoto University (Osaka, 2012)
- Training (Domestic)
  - Visual MCNP6 Editor Workshop, Yousung Hotel (Daejeon, 2015)
  - Long-Life In-Core Instrumentation Workshop, Hanwha Resort (Daecheon, 2015)
  - Nuclear Design Education, KAERI (Daejeon, 2015)
  - Spent Fuel Criticality Analysis Education, KHNP CRI (Daejeon, 2015)
  - Simulator Education, KAERI (Daejeon, 2015)
  - McCARD Developer Training Course, Seoul National University (Seoul, 2015)
  - Monte Carlo Theory and MCNP User Training, Hanyang University (Seoul, 2014)
  - MCNP6 Workshop, KAERI NTC (Daejeon, 2014)
  - Nuclear Design Education, KHNP CRI (Daejeon, 2014)
  - McCARD User Training Course, Seoul National University (Seoul, 2013)
  - Practical Shell Programming for System Administrator, Samsung SDS (Seoul, 2013)
  - Signal Processing with MATLAB, MathWorks Training Services (Seoul, 2013)
  - Whole Core Transport Analysis Seminar, KAERI (Muju, 2013)
  - 2012 Summer school for high performance computing, KISTI & UNIST Supercomputing Center (Ulsan, 2013)
  - Linux, Fortran Education, KISTI & PNU SC (Busan, 2012)
  - Education reactor AGN-201K (10W) Experiment, Kyunghee University (Suwon, 2012)

## PUBLICATIONS SCI Journal

1. **Chidong Kong**, Ho Cheol Shin, and Deokjung Lee\*, "Lifetime Extension of In-Core Self-Powered Neutron Detector Using New Emitter Materials," *Int. J. Energ. Res.*, Published online, <http://onlinelibrary.wiley.com/doi/10.1002/er.3817/abstract> (2017).

2. Yunki Jo, **Chidong Kong**, Jiankai Yu, Sihwan Kim, and Deokjung Lee\*, “High Accuracy Boronometer Design Developed for Light Water Reactors,” *Ann. Nucl. Energy*, Vol. 110, pp. 25-30 (2017).
3. **Chidong Kong**, Hyunsuk Lee, Taewoo Tak, Si Hwan Kim, Seokjean Lyou, Deokjung Lee\*, “Accuracy Improvement of Boron Meter Adopting New Fitting Function and Multi-detector,” *Nucl. Eng. Technol.*, Vol. 48, pp. 1360-1367 (2016).
4. Sooyoung Choi, **Chidong Kong**, Deokjung Lee\*, Mark Williams, “A New Equivalence Theory Method for Treating Doubly Heterogeneous Fuel – II: Verifications,” *Nucl. Sci. Eng.*, Vol. 180, pp. 41-57 (2015).
5. **Chidong Kong**, Eunki Lee, Deokjung Lee\*, “Stability Improvement of Noise Analysis Method in the case of Random Noise Contamination for Subcriticality Measurements,” *Ann. Nucl. Energy*, Vol. 71, pp. 245-253 (2014).

### International Topical Meeting

1. **Chidong Kong**, Hyunsuk Lee, Si Hwan, Kim, Seokjean Lyou, and Deokjung Lee\*, “Development of High Accuracy Boron Meter,” *International Conference on Advanced Technology Innovation 2016 (ICATI 2016)*, Bali, Indonesia, June 30 – July 3 (2016).
2. Sooyoung Choi, Minyong Park, Youzi Zheng, **Chidong Kong**, Jiwon Choe, Hanjoo Kim, Kiho Kim, Ho Cheol Shin, and Deokjung Lee\*, “Development Status of Reactor Physics Code Suite in UNIST,” *Croatian Nuclear Society*, Zadar, Croatia, Jun 5-8 (2016).
3. **Chidong Kong**, Hyunsuk Lee, Si Hwan Kim, Seokjean Lyou, Deokjung Lee\*, “Optimization of Boron Meter Model,” *ICAPP2016*, Sun Valley, ID, USA, April 17-20 (2016).
4. Ho Cheol Shin, Jiwon Choe, **Chidong Kong**, Deokjung Lee\*, “New Burnable Absorber Design with <sup>157</sup>Gd and <sup>167</sup>Er for PWRs,” *ICAPP2015*, Nice, France, May 3-6 (2015).
5. Sooyoung Choi, **Chidong Kong**, Azamat Khassenov, Deokjung Lee\*, “Methodology and Verification of Neutron Transport Code STREAM for Analysis of Innovative Reactor Core Design,” *International Symposium on NPP Technology and HRD*, Busan, Korea, November (2014).
6. **Chidong Kong**, Sooyoung Choi, Deokjung Lee\*, “Deterministic Lattice Code Development at UNIST,” *PHYSOR2014*, Kyoto, Japan, September 28-October 3 (2014).
7. Hyunsuk Lee, **Chidong Kong**, Deokjung Lee\*, “Status of Monte Carlo Code Development at UNIST,” *PHYSOR2014*, Kyoto, Japan, September 28-October 3 (2014).
8. **Chidong Kong**, Deokjung Lee\*, “TICTOC Solutions for the Two-Dimensional C5G7 MOX Benchmark Problem,” *PHYTRA3*, Tetouan, Morocco, May 11-14 (2014).
9. **Chidong Kong**, Eunki Lee, Deokjung Lee\*, “Feasibility Study of Noise Analysis Methods on Virtual Thermal Reactor Subcriticality Monitoring,” *M&C2013*, Sun Valley, ID, USA, May 5-9 (2013).
10. **Chidong Kong**, Eunki Lee, Deokjung Lee\*, “Feasibility Study on Continuous Monitoring of Subcriticality by Noise Analysis Methods,” *ICAPP2013*, Jeju, Korea, April 14-18 (2013).

## International and Domestic Conferences

1. **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, China, August 24-25 (2017).
2. 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, China, August 24-25 (2017).
3. **Chidong Kong**, Hyunsuk Lee, Ho Cheol Shin, Kyoong-Ho Cha, Deokjung Lee\*, “Feasibility Study of Silver as Emitter of In-core Neutron Detector,” *KNS Spring Meeting*, Jeju, Korea, May 11-13 (2016).
4. **Chidong Kong**, Hyunsuk Lee, Si Hwan Kim, Seokjean Lyoo, Deokjung Lee\*, “Sensitivity Evaluation of Boron Meter Model,” *KNS Fall Meeting*, Gyeongju, Korea, October 29-30 (2015).
5. **Chidong Kong**, Hyunsuk Lee, Si Hwan Kim, Seokjean Lyoo, Deokjung Lee\*, “Application of Rational Function for Accuracy Improvement of Boron Meter Model,” *RPHA15*, Jeju, Korea, September 16-18 (2015).
6. Jiwon Choe, **Chidong Kong**, Sooyoung Choi, Minyong Park, Deokjung Lee\*, Ho Cheol Shin, “Preliminary Analysis of New Secondary Shutdown System of Small Modular Pressurized Water Reactor,” *RPHA15*, Jeju, Korea, September 16-18 (2015).
7. **Chidong Kong**, Jiwon Choe, Ho Cheol Shin, Deokjung Lee\*, “Impact of Isotope Separation on Burnable Absorber Performance,” *ANS Annual Meeting*, San Antonio, TX, USA, June 7-11 (2015).
8. **Chidong Kong**, Jiwon Choe, Deokjung Lee\*, Ho Cheol Shin, “Isotope Separation Effect of Burnable Absorber for Long-cycle Boron-free Reactor Core,” *KNS Spring Meeting*, Jeju, Korea, May 6-8 (2015).
9. Minyong Park, **Chidong Kong**, Sooyoung Choi, Deokjung Lee\*, Ho Cheol Shin, “Application of Macro-Micro Simulator for High School Student Training,” *Conference on Nuclear Training and Education 2015*, Jacksonville, FL, USA, February 1-4 (2015).
10. **Chidong Kong**, Sooyoung Choi, Minyong Park, Deokjung Lee\*, “Application of Nuclear Power Plant Simulator for High School Student Training,” *KNS Fall Meeting*, Pyeongchang, Korea, October 30-31 (2014).
11. Jiwon Choe, **Chidong Kong**, Deokjung Lee\*, Hocheol Shin, “Enriched Burnable Absorbers in PWR Fuel Assembly,” *KNS Fall Meeting*, Pyeongchang, Korea, October 30-31 (2014).
12. **Chidong Kong**, Sooyoung Choi, Deokjung Lee, “Method of Characteristics Code Development at UNIST,” *ANS Annual Meeting*, Reno, NV, USA, June 15-19 (2014).
13. Hyunsuk Lee, **Chidong Kong**, Deokjung Lee\*, “A New Monte Carlo Neutron Transport Code at UNIST,” *KNS Spring Meeting*, Jeju, Korea, May 28-30 (2014).
14. **Chidong Kong**, Deokjung Lee\*, “STREAM Solutions for the Two-Dimensional C5G7 MOX Benchmark Problem,” *KNS Spring Meeting*, Jeju, Korea, May 28-30 (2014).

15. **Chidong Kong**, Eunki Lee, Deokjung Lee\*, “Incorporation of Random Noise into Rossi-alpha Technique,” *ANS Winter Meeting*, Washington D.C., USA, November 10-15 (2013).
16. Taewoo Tak, **Chidong Kong**, Jiwon Choe, and Deokjung Lee\*, “Reflector Performance Study in Ultra-long Cycle Fast Reactor,” *KNS Fall Meeting*, Kyeongju, Korea, October 23-25 (2013).
17. Sooyoung Choi, **Chidong Kong**, and Deokjung Lee\*, “Status of Deterministic Transport Code Development at UNIST,” *KNS Fall Meeting*, Kyeongju, Korea, October 23-25 (2013).
18. Hyunsuk Lee, **Chidong Kong**, Sooyoung Choi, Deokjung Lee\*, “Hybrid Method of MOC and MC for Efficient Continuous Energy Neutron Transport Analysis,” *ANS Annual Meeting*, Atlanta, GA, USA, June 16-20 (2013).
19. **Chidong Kong**, Eunki Lee, Deokjung Lee\*, “Performance Evaluation of Power Spectral Density Method for Subcriticality Monitoring of Model Reactor Problem,” *KNS Spring Meeting*, Gwangju, Korea, May 30-31 (2013).
20. **Chidong Kong**, Eunki Lee, Deokjung Lee\*, “Feasibility Study of Recriticality Monitoring by Noise Analysis Method,” *KNS Spring Meeting*, Jeju, Korea, May 17-18 (2012).

**ENGLISH  
CERTIFICATION**

TOEIC 750  
TOEIC Speaking 140

**COMPUTER SKILL**

Fortran programming, Python script, MATLAB script, Shell script

**REACTOR CORE  
ANALYSIS CODE**

STREAM, MCS, MCNP, Serpent, McCARD, Visual MCNP Editor, CASMO, SIMULATE, SCALE, ORIGEN

**GRADUATE  
COURSES TAKEN**

Stochastic Calculus and Applications  
Research Trends in Nuclear Engineering I  
Nuclear Reactor Core Analysis I  
Nuclear Reactor Core Analysis II  
Nuclear Reactor Dynamics  
Numerical Analysis and Applications  
Special Topics in Nuclear Engineering II  
Special Topics in Nuclear Engineering V  
Massively Parallel Programming  
Research Trends in Green Energy I  
Mathematical Methods for Engineers