

Contents

Original Articles

Reactor Physics

- Delayed fast neutron as an indicator of burn-up for nuclear fuel elements
T. Akyurek, S.B. Shoaib, and S. Usman3127
- Validation of Serpent-SUBCHANFLOW-TRANSURANUS pin-by-pin burnup calculations using experimental data from the Temelín II VVER-1000 reactor
Manuel García, Radim Vočka, Riku Tuominen, Andre Gommlich, Jaakko Leppänen, Ville Valtavirta, Uwe Imke, Diego Ferraro, Paul Van Uffelen, Lukáš Milisdörfer, and Victor Sanchez-Espinoza3133
- Copper neutron transport libraries validation by means of a ^{252}Cf standard neutron source
Martin Schulc, Michal Košťál, Evžen Novák, and Jan Šimon3151
- Monte Carlo simulations of chromium target under proton irradiation of 17.9, 22.3 MeV
A. Kara, A. Yilmaz, and M. Yiğit3158
- GEANT4 characterization of the neutronic behavior of the active zone of the MEGAPIE spallation target
Abdesslam Lamrabet, Abdelmajid Maghnouj, Jaouad Tajmouati, and Mohamed Bencheikh3164

Thermal Hydraulics

- Design and analysis of RIF scheme to improve the CFD efficiency of rod-type PWR core
Guangliang Chen, Hao Qian, Lei Li, Yang Yu, Zhijian Zhang, Zhaofer Tian, and Xiaochang Li3171
- Modelling of multidimensional effects in thermal-hydraulic system codes under asymmetric flow conditions – Simulation of ROCOM tests 1.1 and 2.1 with ATHLET 3D-Module
E. Diaz Pescador, F. Schäfer, and S. Kliem3182
- Implementation of a new empirical model of steam condensation for the passive containment cooling system into MARS-KS code: Application to containment transient analysis
Yeon-Gun Lee and Sang Gyu Lim3196
- CFD investigation of a JAEA 7-pin fuel assembly experiment with local blockage for SFR
Jae-Ho Jeong and Min-Seop Song3207
- Flow blockage analysis for fuel assembly in a lead-based fast reactor
Chenglong Wang, Di Wu, Minyang Gui, Rong Cai, Dahuan Zhu, Dalin Zhang, Wenxi Tian, Suizheng Qiu, and G.H. Su3217
- Experimental investigations and development of mathematical model to estimate drop diameter and jet length
Amitava Roy, G. Suneel, J.K. Gayen, K.V. Ravi, and R.B. Grover3229

Nuclear Safety

- Effect of multiple-failure events on accident management strategy for CANDU-6 reactors
Seon Oh YU and Manwoong KIM3236
- Study of combinations of site operating states for multi-unit PSA
Heejong Yoo, Kyungho Jin, and Gyunyoung Heo3247
- The detection and diagnosis model for small scale MSLB accident
Meng Wang and Wenzhen Chen3256
- Numerical simulation on jet breakup in the fuel-coolant interaction using smoothed particle hydrodynamics
Hae Yoon Choi, Hoon Chae, and Eung Soo Kim3264



Contents

Artificial neural network for predicting nuclear power plant dynamic behaviors M. El-Sefy, A. Yosri, W. El-Dakhakhni, S. Nagasaki, and L. Wiebe	3275
A mechanistic analysis of H ₂ O and CO ₂ diluent effect on hydrogen flammability limit considering flame extinction mechanism Joongoo Jeon, Yeon Soo Kim, Hoichul Jung, and Sung Joong Kim	3286
Fuzzy-technique-based expert elicitation on the occurrence probability of severe accident phenomena in nuclear power plants Young A Suh, Kiwon Song, and Jaehyun Cho	3298
Nuclear I&C	
Electromagnetic interference caused by an electric-line current in a cable tray in nuclear power plants Hoon-Keun Lee, Yong-Hwa Kim, and Jaeyul Choo	3314
Application of STPA-SafeSec for a cyber-attack impact analysis of NPPs with a condensate water system test-bed Jinsoo Shin, Jong-Gyun Choi, Jung-Woon Lee, Cheol-Kwon Lee, Jae-Gu Song, and Jun-Young Son	3319
Smart grid and nuclear power plant security by integrating cryptographic hardware chip Niraj Kumar, Vishnu Mohan Mishra, and Adesh Kumar	3327
Radiation testing of low cost, commercial off the shelf microcontroller board Tomas Fried, Antonio Di Buono, David Cheneler, Neil Cockbain, Jonathan M. Dodds, Peter R. Green, Barry Lennox, C. James Taylor, and Stephen D. Monk	3335
Nuclear Physics, Fusion, and Laser Technology	
Beam line design and beam transport calculation for the μ SR facility at RAON Kihong Pak, Junesic Park, Jae Young Jeong, Jae Chang Kim, Kyungmin Kim, Yong Hyun Kim, Jaebum Son, Ju Hahn Lee, Wonjun Lee, and Yong Kyun Kim	3344
Nuclear Fuel Cycle and Radioactive Waste Management	
Adsorption and separation behaviors of Y(III) and Sr(II) in acid solution by a porous silica based adsorbent Hao Wu, Taiga Kawamura, and Seong-Yun Kim	3352
Thermal conductivity prediction model for compacted bentonites considering temperature variations Seok Yoon, Min-Jun Kim, Seunghun Park, and Geon-Young Kim	3359
Nuclear Fuel and Reactor Materials	
Assessment of three European fuel performance codes against the SUPERFACT-1 fast reactor irradiation experiment L. Luzzi, T. Barani, B. Boer, L. Cognini, A. Del Nevo, M. Lainet, S. Lemehov, A. Magni, V. Marelle, B. Michel, D. Pizzocri, A. Schubert, P. Van Uffelen, and M. Bertolus	3367
Prediction of ballooning and burst for nuclear fuel cladding with anisotropic creep modeling during Loss of Coolant Accident (LOCA) Jinsu Kim, Jeong Whan Yoon, Hyochan Kim, and Sung-Uk Lee	3379
Influence of neutron irradiation and ageing on behavior of SAV-1 reactor alloy K.V. Tsay, O.V. Rofman, V.V. Kudryashov, A.V. Yarovchuk, and O.P. Maksimkin	3398
Radiation Application	
A real-time sorting algorithm for in-beam PET of heavy-ion cancer therapy device Lingyun Ke, Junwei Yan, Jinda Chen, Changxin Wang, Xiuling Zhang, Chengming Du, Minchi Hu, Zuoqiao Yang, Jiapeng Xu, Yi Qian, Qianshun She, Haibo Yang, Hongyun Zhao, Tianlei Pu, Changxu Pei, Hong Su, and Jie Kong	3406





Contents

An investigation on the improvement of neutron radiography system of the Tehran research reactor by using MCNPX simulations <i>Moharram Amini, Seyed Mehrdad Zamzamian, Amir Hossein Fadaei, Morteza Gharib, and Seyed Amir Hosein Feghhi</i>	3413
Efficiency calibration and coincidence summing correction for a NaI(Tl) spherical detector <i>Salam F. Nouredine, Mahmoud I. Abbas, and Mohamed S. Badawi</i>	3421
Comparison of theoretical and machine learning models to estimate gamma ray source positions using plastic scintillating optical fiber detector <i>Jinhong Kim, Seunghyeon Kim, Siwon Song, Jae Hyung Park, Jin Ho Kim, Taeseob Lim, Cheol Ho Pyeon, and Bongsoo Lee</i>	3431
Nuclear Structural Analysis and Plant Management & Maintenance	
Characterising the dynamic seals used in absorber rod drive mechanisms in Indian FBR <i>Nihal Kaushal, Sudheer Patri, R. Suresh Kumar, C. Meikandamurthy, B.K. Sreedhar, S. Murugan, and S. Raghupathy</i>	3438
Technical Notes	
Thermal Hydraulics	
Extension of the NEAMS workbench to parallel sensitivity and uncertainty analysis of thermal hydraulic parameters using Dakota and Nek5000 <i>Marc-Olivier G. Delchini, Laura P. Swiler, and Robert A. Lefebvre</i>	3449
Nuclear I&C	
Human-machine system optimization in nuclear facility systems <i>Jonathan K. Corrado</i>	3460
Corrigendum	
Corrigendum to “High performance γ -ray imager using dual anti-mask method for the investigation of high-energy nuclear materials” [NET, volume 53, issue 7, July 2021, pages 2371–2376] <i>Taewoong Lee and Wonho Lee</i>	3464

This journal was supported by the Korean Federation of Science and Technology Societies Grant funded by the Korean Government (Ministry of Education).

