



# OFFICIAL PROGRAM

Sociedad Nuclear Mexicana  
&  
American Nuclear Society

April 22 – 26, 2018  
Cancun, Q.R., Mexico  
Marriott Cancun Resort

***“Reactors Physics Paving The Way Towards More Efficient  
Systems”***



## Organizing Committee

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## Block Program (Daily Schedule)

	Monday	Tuesday	Wednesday	Thursday	Room
<b>8:00 -10:00</b>		Track 1 Session 3	Track 1 Session 11	Track 1 Session 15	Maya 1
Opening		Track 1 Session 4	Track 3 Session 5	Track 7 Session 2	Maya 2
Ceremony		Track 2 Session 3	Track 4 Session 2	SS 1 Session 4	Maya 3
		Track 5 Session 2	Track 5 Session 4	Track 5 Session 7	Maya 4
Plenary 1		Track 8 Session 2	Track 9 Session 1	SS 5 Session 1	Mexico-Cozumel
<b>10:00-10:20</b>	Coffee Break	Coffee Break	Coffee Break	Coffee Break	
<b>10:20-12:20</b>	Plenary 2	Track 1 Session 5	Track 1 Session 12	Track 1 Session 16	Maya 1
Plenary 3		Track 1 Session 6	Track 3 Session 6	Track 3 Session 7	Maya 2
Plenary 4		Track 2 Session 4	Track 4 Session 3	SS 3 Session 1	Maya 3
		Track 6 Session 1	Track 10 Session 1	Track 6 Session 3	Maya 4
		Track 8 Session 3	Track 9 Session 2	SS 5 Session 2	Mexico-Cozumel
<b>12:20-13:30</b>	Lunch	Lunch	Lunch	Lunch	
<b>13:30-15:30</b>	Track 1 Session 1	Track 1 Session 7	Track 1 Session 13	Track 1 Session 17	Maya 1
	Track 2 Session 1	Track 1 Session 8	Track 4 Session 4		Maya 2
	Track 3 Session 1	Track 3 Session 3	Track 5 Session 5		Maya 3
	Track 4 Session 1	Track 5 Session 3	Track 7 Session 1		Maya 4
	Track 8 Session 1	SS 1 Session 1	SS 1 Session 3		Mexico-Cozumel
<b>15:30-15:50</b>	Coffee Break	Coffee Break	Coffee Break		
<b>15:50-17:50</b>	Track 1 Session 2	Track 1 Session 9	Track 1 Session 14		Maya 1
	Track 2 Session 2	Track 1 Session 10	SS 2 Session 1		Maya 2
	Track 3 Session 2	Track 3 Session 4	Track 5 Session 6		Maya 3
	Track 5 Session 1	SS 4 Session 2	Track 6 Session 2		Maya 4
	SS 4 Session 1	SS 1 Session 2	Track 8 Session 4		Mexico-Cozumel

### Technical Sessions

Identifier	Name
Track 1	Reactor Analysis Methods
Track 2	Deterministic Transport Theory
Track 3	Monte Carlo Methods
Track 4	Fuel Cycle and Nuclear Criticality Safety
Track 5	Reactor Physics Experiments and Nuclear Data
Track 6	Reactor Concepts and Designs
Track 7	Reactor Operation and Safety
Track 8	Transient and Safety Analysis
Track 9	Education, Research Reactors and Spallation Sources Physics
Track 10	Radiation Applications and Nuclear Safeguards

### Special Sessions

Identifier	Name
SS 1	Uncertainty Analysis and Reduced Order Modeling
SS 2	Space Nuclear Systems
SS 3	Validation of Reactor Kinetics Measurements
SS 4	Hybrid Monte Carlo and Deterministic Methods
SS 5	Fast Reactors



# Full Program

**MONDAY, APRIL 23**

## Opening Ceremony

**Location:** Maya 1, 2, 3, 4    **Time:** 8:30 – 9:20

## Plenary Session 1

**Chair:** Juan Luis Francois

**Speaker:** Massimo Salvatore (CEA)

***Measuring « the earth and the sky »***

**Location:** Maya 1, 2, 3, 4    **Time:** 9:20 – 10:00

## Plenary Session 2

**Chair:** Javier C. Palacios

**Speaker:** Stefano Monti (IAEA)

***IAEA support to advanced modelling and simulation for innovative nuclear systems***

**Location:** Maya 1, 2, 3, 4    **Time:** 10:20 – 11:00

## Plenary Session 3

**Chair:** Gustavo Alonso

**Speaker:** Tatiana Ivanova (OECD - NEA)

***Overview of NEA activities in the area of reactor physics***

**Location:** Maya 1, 2, 3, 4    **Time:** 11:00 – 11:40

## Plenary Session 4

**Chair:** Julian Sanchez

**Speaker:** Mark deHart (INL)

***International Activities in Support of Validation and Benchmarking of Multi-Physics Modeling and Simulation Methods***

**Location:** Maya 1, 2, 3, 4    **Time:** 11:40 – 12:20

Opening  
Ceremony  
& Plenary  
Session



## MONDAY, APRIL 23

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Technical Session Monday April 23

#### Track 1 Reactor Analysis Methods Session 1

##### Chair

Location: Maya 1

- 13:30-13:50** DEVELOPMENT OF STEADY ANALYSIS MODEL FOR MOLTEN SALT FAST REACTOR  
Kun Zhuang, Xiaobin Tang, Liangzhi Cao
- 13:50-14:10** MODELING OF THE EPR HEAVY REFLECTOR USING DONJON-5  
Marc Muller and Julien Taforeau
- 14:10-14:30** IN-CORE PWR LOADING PATTERN OPTIMIZATION VIA TABU SEARCH  
Mark Mawdsley, Geoff Parks
- 14:30-14:50** SIMULATED EXTENSIONS FOR VVER ANALYSES  
Tamer Bahadir
- 14:50-15:10** DESIGN OF HIGH POWER DENSITY CIVIL NUCLEAR MARINE PROPULSION CORES. PART I: ASSEMBLY-LEVEL ANALYSIS  
Syed Bahauddin Alam, Geoff T. Parks, Bader Almutairi and Cameron S. Goodwin
- 15:10-15:30** HIGH POWER DENSITY REACTOR CORE DESIGN FOR CIVIL NUCLEAR MARINE PROPULSION. PART II: WHOLE-CORE ANALYSIS  
Syed Bahauddin Alam, Geoff T. Parks, Bader Almutairi and Cameron S. Goodwin

#### Track 2 Deterministic Transport Theory Session 1

##### Chair

Location: Maya 2

- 13:30-13:50** QUADRATIC SERENDIPITY FUNCTIONS FOR DGFEM TRANSPORT ON 2D POLYGONAL AND 3D EXTRUDED POLYGONAL GRIDS  
Michael W. Hackemack
- 13:50-14:10** POLYNOMIAL AXIAL METHOD OF CHARACTERISTICS TRANSPORT AND SYNTHETIC ACCELERATION FOR NEUTRON TRANSPORT IN 3D EXTRUDED GEOMETRIES  
Laurent Graziano, Simone Santandrea, Daniele Sciannandrone
- 14:10-14:30** HYDRA: A 3-D PARALLEL DISCRETE ORDINATES CODE FOR MASSIVE TRANSPORT CALCULATION  
Longfei Xu, Liangzhi Cao, Youqi Zheng and Hongchun Wu
- 14:30-14:50** A COMPARISON OF THREE A POSTERIORI SPATIAL ERROR ESTIMATORS FOR THE SN NEUTRON TRANSPORT EQUATION  
Nathan H Hart, Yousry Y Azmy, Jose I Duo
- 14:50-15:10** ON THE INFLUENCE OF QUADRATURE SCHEMES FOR THE ITERATIVE SOLUTION OF LINEAR SYSTEMS IN EXPLICIT TWO-DIMENSIONAL DISCRETE ORDINATES NODAL FORMULATIONS  
Francisco Wagner de Moura, Liliane Basso Barichello, Rudnei Dias da Cunha and Camila Becker Picoloto
- 15:10-15:30** AN IMPROVED 2D/1D P3 METHOD WITH ANGLE-DEPENDENT LEAKAGE AND PIN HOMOGENIZATION  
Michael Jarrett, Brendan Kochunas, Edward Larsen, Thomas Downar

## MONDAY, APRIL 23

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 3 Monte Carlo Methods Session 1

Chair

Location: Maya 3

- 13:30-13:50** A FULLY ANALYTIC SPACE-TIME DEPLETION BENCHMARK AND ITS APPLICATION TO MONTE CARLO SIMULATION  
Gabriel Kooreman and David P. Griesheimer
- 13:50-14:10** METHODS FOR COMPUTING MONTE CARLO TALLIES ON THE GPU  
Kerry L. Bossler
- 14:10-14:30** ACCELERATING MONTE CARLO BY VARIABLE FIDELITY: FIRST RESULTS  
Mikolaj Adam Kowalski and Eugene Shwageraus
- 14:30-14:50** DEVELOPMENT OF PHOTON-TRANSPORT CAPABILITY IN UNIST MONTE CARLO CODE MCS  
Matthieu Lemaire, Hyunsuk Lee, Bamidele Ebiwonjumi, Chidong Kong, Wonkyeong Kim, Yunki Jo, Jinsu Park, and Deokjung Lee
- 14:50-15:10** STUDIES OF INTRA-PIN POWER DISTRIBUTIONS IN OPERATED BWR FUEL ASSEMBLIES USING MCNP WITH A CYCLE CHECK-UP METHODOLOGY  
M. Pecchia, H. Ferroukhi, A. Vasiliev, P. Grimm
- 15:10-15:30** A QUASI-STATIC MONTE CARLO ALGORITHM FOR THE SIMULATION OF SUB-PROMPT CRITICAL TRANSIENTS  
Travis J. Trahan

### Track 4 Fuel Cycle and Nuclear Criticality Safety Session 1

Chair

Location: Maya 4

- 13:30-13:50** SENSITIVITY AND UNCERTAINTY METHODS FOR EFFECTIVE DELAYED NEUTRON FRACTION AND NEUTRON GENERATION TIME WITH SUMMON  
P. Romojaro, F. Álvarez-Velarde, N. García-Herranz
- 13:50-14:10** NUCLEAR DATA UNCERTAINTY PROPAGATION FROM LATTICE TO CORE CALCULATIONS IN WIMS-PANTHER  
B. A. Lindley, H. Prudden, G. Alford, D.J. Powney, J.G. Hosking, T. Fry, D. Long, P.N. Smith
- 14:10-14:30** UNCERTAINTY AND SENSITIVITY ANALYSES OF TH-MOX FUEL IN ABWRS  
Una Davies, Eugene Shwageraus, Cheuk Wah Lau
- 14:30-14:50** SUBCRITICALITY ANALYSIS OF NEUTRON-MULTIPLYING MEDIA WITH UNKNOWN COMPOSITION AND LOCALIZATION OF NUCLEAR MATERIALS  
Andrianova O.N., Dulin V.A., Dulin V.V. and Andrianov A.A., Kuptsov I.S.
- 14:50-15:10** FEASIBILITY STUDIES FOR SIMULTANEOUS IRRADIATION OF NBSR & MITR FUEL ELEMENTS IN THE BR2 REACTOR  
Silva Kalcheva, Steven Van Dyck, Sven Van den Berghe, Geert Van den Branden
- 15:10-15:30** NEUTRONIC MODELLING OF FUEL DEBRIS FOR A CRITICALITY EVALUATION  
María Freiria López, Michael Buck and Jörg Starflinger

Technical  
Session  
Monday  
April 23

## MONDAY, APRIL 23

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Technical Session Monday April 23

#### Track 8 Transient and Safety Analysis Session 1

##### Chair

Location: Mexico - Cozumel

- 13:30-13:50** MODELING OF THE TREAT M8 CALIBRATION SERIES MEASUREMENTS USING MAMMOTH  
Benjamin A. Baker, Javier Ortensi and Mark D. DeHart
- 13:50-14:10** IMPLEMENTATION OF THE TRANSIENT FIXED-SOURCE PROBLEM IN THE NEUTRON  
TRANSPORT CODE PROTEUS-MOCEX  
Tat Nghia Nguyen, Yeon Sang Jung, Thomas Downar, and Changho Lee
- 14:10-14:30** OPTIMIZATION OPTIONS FOR NARROWING TRANSIENT TESTING PULSE WIDTHS  
NECESSARY TO ENHANCE LWR RIA SIMULATIONS IN THE TREAT FACILITY  
Nicolas E. Woolstenhulme, John D. Bess, Cliff B. Davis, Louis M. Dusanter, Charles P.  
Folsom, James R. Parry, Tate H. Shorthill, and Haihua Zhao
- 14:30-14:50** EVALUATION OF VERA-CS TRANSIENT CAPABILITY FOR ANALYZING THE AP1000®  
REACTOR CONTROL ROD EJECTION ACCIDENT  
Vefa N. Kucukboyaci, Brendan Kochunas, Thomas J. Downar, Aaron Wysocki, and Robert  
K. Salko
- 14:50-15:10** HIGH PRECISION NEUTRONIC CALCULATIONS FOR TRANSIENT SIMULATIONS FOR FRM  
II  
Christian Reiter, Harald Breikreutz, Anton Röhrmoser, Armin Seubert and Winfried Petry
- 15:10-15:30** TREAT M2 EXPERIMENT MODELING FOR TRANSIENT BENCHMARK ANALYSIS  
N.C. Sorrell and A.I. Hawari

#### Track 1 Reactor Analysis Methods Session 2

##### Chair

Location: Maya 1

- 15:50-16:10** ADVANCED EIGENVALUE AND AXIAL OFFSET SEARCH METHODOLOGY IN  
ANC9/BEACON7  
Baocheng Zhang, Boyan D Ivanov, William A Boyd
- 16:10-16:30** IMPLEMENTATION AND VERIFICATION OF A TRANSPORT-BASED ADJOINT CAPABILITY  
IN CASMO5  
Rodolfo M. Ferrer and Joel D. Rhodes
- 16:30-16:50** INTEGRATION OF FUNCTIONAL EXPANSION METHODOLOGIES AS A MOOSE MODULE  
Brycen Wendt, April Novak, Leslie Kerby, Paul Romano
- 16:50-17:10** A MULTILEVEL DIFFUSION SOLVER FOR MULTI-DIMENSIONAL TRANSPORT PROBLEMS  
WITH CMFD  
Ben C. Yee, Brendan Kochunas, Edward W. Larsen
- 17:10-17:30** GENERALIZED EQUIVALENCE THEORY FOR MULTI-SCALE EQUIVALENCE IN ASSEMBLY  
TRANSPORT CALCULATIONS  
Guillaume Giudicelli, Kord Smith and Benoit Forget
- 17:30-17:50** DEVELOPMENT OF RAINBOW CODE TO CALCULATE REACTIVITY CHANGES DUE TO  
ASSEMBLY BOWING IN SODIUM FAST REACTORS  
Tian Jing, Won Sik Yang



## MONDAY, APRIL 23

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 2 Deterministic Transport Theory Session 2

Chair

Location: Maya 2

- 15:50-16:10** ANALYSIS OF COMMUNICATION PERFORMANCE DEGRADATION OF THE RADIATION TRANSPORT CODE PIDOTS ON HIGH-UTILIZATION, MULTI-USER HPC SYSTEMS  
Raffi Yessayan, Yousry Y. Azmy
- 16:10-16:30** STABILIZING CMFD WITH LINEAR PROLONGATION  
Dean Wang, Sicong Xiao, Yunlin Xu, Thomas Downar, Emily Shemon, Yulong Xing
- 16:30-16:50** NEW RESONANCE TREATMENT FOR PHOENIX5  
Boschetti Facundo, Villarino Eduardo, and Lipiec Waldemar
- 16:50-17:10** COMPARISON OF THREE ACCELERATION TECHNIQUES FOR THE FIXED SOURCE NEUTRON TRANSPORT CALCULATION  
Shengcheng Zhou, Hongchun Wu, Liangzhi Cao, Youqi Zheng
- 17:10-17:30** EARLY EXPERIENCE IN FULL CORE REACTOR SIMULATION WITH THE RANDOM RAY METHOD  
John Tramm, Benoit Forget, Kord Smith
- 17:30-17:50** RECENT PROGRESS IN THE V&V OF THE FRENCH APOLLO3® CODE : 3D FULL CORE ANALYSIS OF THE UH1.2 INTEGRAL EXPERIMENT USING IDT CHARACTERISTICS METHOD  
Jean-Marc Palau, Emiliano Masiello, JeanFrançois Vidal, Pascal Archier, Bastien Faure

### Track 3 Monte Carlo Methods Session 2

Chair

Location: Maya 3

- 15:50-16:10** EXTENDING SERPENT2/SUBCHANFLOW COUPLING FOR DEPLETION CALCULATION - CURRENT STATUS AND CHALLENGES  
Yousef Alzaben, Victor H. Sanchez-Espinoza, and Robert Stieglitz
- 16:10-16:30** NEW STOCHASTIC SUBSTEP BASED BURNUP SCHEME FOR SERPENT 2  
V. Valtavirta and J. Leppanen
- 16:30-16:50** VALIDATION OF MPACT CROSS SECTION LIBRARY WITH SHIFT USING VERA-CS  
Casey Stocking, Tara Pandya, Maria Avramova
- 16:50-17:10** RMC-CTF MULTIPHYSICS SOLUTIONS TO VERA BENCHMARK PROBLEMS 6 AND 7  
Shichang Liu, Zhen Luo, Xiaoyu Guo, Ganglin Yu and Kan Wang
- 17:10-17:30** RESEARCH OF SUPERMC AND FLUENT COUPLING SIMULATION BASED ON THE PARAMETRIC-SURFACE-REPRESENTED ENTITY CLIPPING METHOD  
Lei Wang, Peng He, Guangyao Sun, Lijuan Hao, and Jing Song
- 17:30-17:50** VECTORIZED MONTE CARLO FOR GUARDYAN - A GPU ACCELERATED REACTOR DYNAMICS CODE  
Balazs Molnar, Gabor Tolnai, David Legrady, Mate Szieberth
- 17:50-18:10** A CONSISTENT MONTE CARLO TREATMENT OF RADIATION RESPONSES IN AND AROUND CRITICAL CONFIGURATIONS  
Kenneth W. Burn; Patrizio Console Camprini

Technical  
Session  
Monday  
April 23

## MONDAY, APRIL 23

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Technical Session Monday April 23

#### Track 5 Reactor Physics Experiments and Nuclear Data Session 1

##### Chair

Location: Maya 4

- 15:50-16:10** ANALYSIS OF THE JSI TRIGA PULSE EXPERIMENTS  
Anze Pungercic, Luka Snoj
- 16:10-16:30** FISSION RATE REDISTRIBUTION EXPERIMENTS AT THE JSI TRIGA REACTOR FOR THE VALIDATION OF COMPUTER CODES  
Tanja Goričanec, Gašper Žerovnik, Loic Barbot, Damien Fourmentel, Christophe Destouches, Luka Snoj
- 16:30-16:50** EVALUATION OF THE NEUTRONIC SUPERPHENIX START-UP COMMISSIONING TESTS WITH TRIPOLI4  
E. Garcia, P. Sciora and G. Rimpault
- 16:50-17:10** DESIGN OF AN INTERMEDIATE ENERGY CRITICAL EXPERIMENT TO VALIDATE NUCLEAR DATA AND COMPUTATIONAL METHODS IN THE UNRESOLVED RESONANCE REGION  
Miriam A. Rathbun, Rian Bahran, Jesson Hutchinson, Theresa Cutler
- 17:10-17:30** DEVELOPMENT OF CRITICAL EXPERIMENTS TO PROVIDE VALIDATION DATA FOR MULTIPHYSICS COUPLING CODES  
Mathieu Dupont, Matthew D. Eklund, Wei Ji, and Peter F. Caracappa
- 17:30-17:50** REACTOR PHYSICS EXPERIMENTS ON VENUS-II ZERO POWER REACTOR IN CHINA INSTITUTE OF ATOMIC ENERGY  
Qingfu Zhu, Qi Zhou, Shuhong Liang, Wei Zhang, Huangda Luo, Yanhui Quan, Yang Liu, Xueying Zhang, Long Gu, Wei Jiang, Bo Wan
- 17:50-18:10** GRAY CONTROL ROD CRITICAL EXPERIMENTS USING TUNGSTEN AND TUNGSTEN-RHENIUM  
Kenichi Yoshioka, Takuya Umamo, Tsukasa Kikuchi, Tsukasa Sugita, Satoshi Sugahara and Mohamed Ouisloumen

#### SS4 Hybrid Monte Carlo and Deterministic Methods Session 1

##### Chair

Location: Mexico - Cozumel

- 15:50-16:10** ACCELERATION OF FISSION SOURCE CONVERGENCE IN THE SERPENT 2 MONTE CARLO CODE USING A RESPONSE MATRIX BASED SOLUTION FOR THE INITIAL SOURCE DISTRIBUTION  
Jaakko Leppänen
- 16:10-16:30** CONTINUOUS ENERGY COMET ANALYSIS OF CONTROL ROD REACTIVITY IN AHTRS  
Dingkang Zhang and Farzad Rahnema
- 16:30-16:50** ACCURACY OF RAPID FOR SIMULATION OF POOLS WITH DIVERSE SPENT FUELS  
Nathan J. Roskoff, Valerio Mascolino, and Alireza Haghighat
- 16:50-17:10** BENCHMARKING OF THE RAPID CODE SYSTEM USING THE GBC-32 CASK WITH VARIABLE BURNUPS  
Valerio Mascolino, Nathan J. Roskoff, Alireza Haghighat
- 17:10-17:30** DEVELOPMENT OF A NOVEL FUEL BURNUP METHODOLOGY USING THE RAPID PARTICLE TRANSPORT CODE SYSTEM  
Nathan J. Roskoff and Alireza Haghighat

## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 3

#### Chair

Location: Maya 1

- 8:00-8:20** SENSITIVITY ANALYSIS OF INITIAL CRITICAL STATE MODELING WITH VSOP CODE  
Yingjie Wu, Lidong Wang, Yizhen Wang, Jiong Guo, Fu Li
- 8:20-8:40** THE AMPX/SCALE MULTIGROUP CROSS SECTION PROCESSING FOR FAST REACTOR ANALYSIS  
Kang Seog Kim, Mark L. Williams, Andrew M. Holcomb, Dorothea Wiarda, Byoung Kyu Jeon, and Won Sik Yang
- 8:40-9:00** PREDICTION OF THE ENERGY PER FISSION AND HEATING IN ADVANCED GAS-COOLED REACTORS  
Tom Taylor, Ruth Aldred, Paul Bryce and Martin Knight
- 9:00-9:20** EFFECTIVE SUBGROUP METHOD EMPLOYING MACRO LEVEL GRID OPTIMIZATION  
Hansol Park, Han Gyu Joo
- 9:20-9:40** DEVELOPMENT OF A SENSITIVITY ANALYSIS CODE FOR 3-D C5G7 BENCHMARKS BASED ON THE PERTURBATION THEORY  
Qu Wu, Xingjie Peng, Yingrui Yu, Qing Li, Kan Wang
- 9:40-10:00** NEW CALCULATION METHOD FOR PWR CONTROL ROD CONFIGURATIONS WITH APOLLO3®  
Jean-Marc Palau, Valentin Jouault, Gérald Rimpault

### Track 1 Reactor Analysis Methods Session 4

#### Chair

Location: Maya 2

- 8:00-8:20** CACHE EFFICIENT FLUX REGION ASSIGNMENT FOR THE METHOD OF CHARACTERISTICS  
Akio YAMAMOTO, Akinori GIHO, and Tomohiro ENDO
- 8:20-8:40** ITERATED DISCONTINUITY FACTORS BASED ON REFERENCE OUTGOING CURRENTS FOR DISCONTINUOUS FINITE ELEMENT DIFFUSION  
Vincent Laboure, Javier Ortensi, Yaqi Wang, Sebastian Schunert, Mark DeHart
- 8:40-9:00** PRACTICAL SOLUTION TO THE RESONANCE INTERFERENCE EFFECT IN THE RESONANCE SELF-SHIELDING CALCULATION OF THE DEPLETED FUEL COMPOSITION  
Qian Zhang, Song Li, Qiang Zhao, Liangzhi Cao and Hongchun Wu
- 9:00-9:20** ACCELERATION OF PIN-BY-PIN CALCULATIONS WITH THE HETEROGENEOUS VARIATIONAL NODAL METHOD  
Tengfei Zhang, Hongchun Wu, Liangzhi Cao and Yunzhao Li
- 9:20-9:40** VALKIN-FVM: A MODAL FINITE VOLUME METHOD FOR SOLVING THE TRANSIENT NEUTRON DIFFUSION EQUATION ON UNSTRUCTURED MESHES  
A. Bernal, J.E. Roman, R. Miró and G. Verdú
- 9:40-10:00** HETEROGENEOUS DISCONTINUITY FACTORS IN HETEROGENEOUS VARIATIONAL NODAL METHOD TO ELIMINATE THE CONTROL ROD CUSPING EFFECT  
Boning Liang, Hongchun Wu, Yunzhao Li

Technical  
Session  
Tuesday  
April 24

## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 2 Deterministic Transport Theory Session 3

Chair

Location: Maya 3

- 8:00-8:20** STABILITY ANALYSIS OF LPCMFD FOR ACCELERATING SN METHOD  
Qicang Shen, Yunlin Xu, Thomas Downar and Dean Wang
- 8:20-8:40** FIXED-POINT ACCELERATION OF NONLINEAR SPATIAL DISCRETIZATIONS  
Michael W. Hackemack
- 8:40-9:00** THE IMPACTS OF DIFFERENT APPROXIMATIONS IN MULTI-GROUP LIBRARY AND SELF-SHIELDING CALCULATION  
Qingming He, Zhouyu Liu, Tiejun Zu, Liangzhi Cao, and Hongchun Wu
- 9:00-9:20** DEVELOPMENT OF A 2-DIMENSIONAL METHOD OF CHARACTERISTICS BASED CODE DIAMOND FOR NEUTRONIC ANALYSIS OF RECTANGULAR ASSEMBLIES  
Lakshay Jain, R. Karthikeyan, Umasankari Kannan
- 9:20-9:40** ANGULAR ERROR REMOVAL IN THE APPLICATION OF METHOD OF MANUFACTURED SOLUTIONS TO THE METHOD OF CHARACTERISTICS  
Jipu Wang; William Martin; Benjamin Collins
- 9:40-10:00** ASYMPTOTIC CONVERGENCE OF THE ANGULAR DISCRETIZATION ERROR OF THE UNCOLLIDED SCALAR FLUX IN THE DISCRETE ORDINATES TRANSPORT EQUATION  
Xiaoyu Hu, Yousry Y. Azmy

Technical  
Session  
Tuesday  
April 24

### Track 5 Reactor Physics Experiments and Nuclear Data Session 2

Chair

Location: Maya 4

- 8:00-8:20** ENDF/B-VIII.0: THE 8TH MAJOR RELEASE OF THE ENDF/B LIBRARY CONTAINING CIELO-PROJECT EVALUATIONS, NEW STANDARDS AND THERMAL SCATTERING DATA  
D.A. Brown for the Cross Section Evaluation Working Group
- 8:20-8:40** THE DOPPLER-BROADENING OF HIGH-Z SCATTERING RESONANCES  
D. Kent Parsons
- 8:40-9:00** A CONSISTENT EVALUATION OF DELAYED NEUTRON GROUP CONSTANTS AND COVARIANCES FOR <sup>235</sup>U AND <sup>238</sup>U USING A COMBINATION OF MICROSCOPIC AND MACROSCOPIC DATA  
P. Leconte, P. Archier, C. De Saint Jean, R. Diniz, A. Dos Santos, L. Fautrat, D. Foligno, B. Geslot, E. Gilad, P. Tamagno, G. Truchet, A. Zoia
- 9:00-9:20** FULL LAW ANALYSIS SCATTERING SYSTEM HUB (FLASSH)  
Y. Zhu, A. I. Hawari
- 9:20-9:40** ASSESSMENT OF THERMAL NEUTRON SCATTERING IN A HEAVY PARAFFINIC MOLECULAR MATERIAL  
Cole A. Manring, Ayman I. Hawari
- 9:40-10:00** INTEGRAL DATA ASSIMILATION ON <sup>235</sup>U & <sup>238</sup>U NUCLEAR DATA AND IMPACT ON FCA-IX SPECTRAL INDICES TO REASSESS MINOR ACTINIDES FISSION CROSS SECTIONS  
Virginie Huy, Gilles Noguère, Gérald Rimpault

## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 8 Transient and Safety Analysis Session 2

#### Chair

Location: Mexico - Cozumel

- 8:00-8:20** PWR NEUTRON NOISE PHENOMENOLOGY: PART I - SIMULATION OF STOCHASTIC PHENOMENA WITH SIMULATE-3K  
Chionis D., Dokhane A., Ferroukhi H., Girardin G., Pautz A.
- 8:20-8:40** PWR NEUTRON NOISE PHENOMENOLOGY: PART II – QUALITATIVE COMPARISON AGAINST PLANT DATA  
Chionis D., Dokhane A., Ferroukhi H., Girardin G., Pautz A.
- 8:40-9:00** PHYSICS/INSTANT TIME-DEPENDENT HETEROGENEOUS TRANSPORT SIMULATIONS OF THE C5G7-TD BENCHMARK  
A. Jambrina, A. Alfonsi, C. Rabiti, J. Hou, and K. Ivanov
- 9:00-9:20** DEVELOPMENT OF A SUBCHANNEL MODEL WITHIN THE ANSWERS SOFTWARE SERVICE WIMS REACTOR PHYSICS CODE  
Brendan Tollit, Alan Charles, Andrew Cox, Kushagra Kohli, Ben Lindley, Glynn Hosking, Peter Smith, Michael Dillistone, Paul Smith
- 9:20-9:40** AN IRSN CONTRIBUTION TO THE UAM PROJECT: MINI-CORE, NUMERICAL ROD EJECTION EXERCISE  
A. Sargeni, F. Fouet, E. Ivanov, P. Probst
- 9:40-10:00** INVESTIGATING DECOUPLING EFFECTS IN CFV TYPE OF REACTORS USING AVERY' S COUPLED REACTOR THEORY  
G. Palmiotti, M. Salvatore, S. Sen, C.Rabiti, M. Aufiero, and J. Tommasi

### Track 1 Reactor Analysis Methods Session 5

#### Chair

Location: Maya 1

- 10:20-10:40** PRELIMINARY STUDY ON FEW GROUP CROSS SECTION REPRESENTATION METHOD BASED ON MODEL TREE ALGORITHM  
Wenbo Zhao, Haitao Ju, Yingrui Yu, Xiaoming Chai, and Junchong Yu
- 10:40-11:00** ASSESSMENT OF AMBB PERFORMANCES IN FAST REACTORS  
Aliberti G, Kim TK, Stauff NE, and Hayes SL
- 11:00-11:20** JHR NEUTRON DETERMINISTIC CALCULATION SCHEME IMPROVEMENT THANKS TO MONTE CARLO ANALYSIS IN DEPLETION  
J. Politello, F. Jeury, L. Gaubert, J.M. Vidal, C. Vaglio-Gaudard, A. Chambon, C. Demaziere, P. Vinai
- 11:20-11:40** A PEBBLE TRACKING TRANSPORT ALGORITHM FOR PEBBLE BED REACTOR ANALYSIS  
Yaqi Wang, Javier Ortensi, Sebastian Schunert and Vincent Laboure
- 11:40-12:00** ENVIRONMENT EFFECT TREATMENTS IN PWR WHOLE CORE PIN-BY-PIN CALCULATION  
Hongchun Wu, Bin Zhang, Yunzhao Li, Liangzhi Cao
- 12:00-12:20** HIGH FIDELITY MULTIPHYSICS CALCULATIONS OF HOT CHANNEL FACTORS FOR SODIUM-COOLED FAST REACTORS  
Emily R. Shemon, Yiqi Yu, Taek K. Kim, and Alexander J. Mausolff

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## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 6

Chair

Location: Maya 2

- 10:20-10:40** DEVELOPMENT AND VALIDATION OF SENSITIVITY AND UNCERTAINTY CALCULATIONS USING THE 3D NEUTRON TRANSPORT CODE CRONOS2 AT AN INDUSTRIAL SCALE  
J. Gaillot, T. Bonaccorsi, G. Noguere, T. Truchet
- 10:40-11:00** VERIFICATION OF AN INDIGENOUS CODE SYSTEM FOR CALCULATION OF VVER-1200 (AES-2006) REACTOR  
Temesvari E, Brolly A, Hegyi Gy, Hordosy G and Maraczy Cs
- 11:00-11:20** CASMO5 ISOTOPIC COMPARISON TO THE ARIANE MIXED-OXIDE PRESSURIZED WATER REACTOR SPENT FUEL MEASUREMENTS  
Emiliya Georgieva, Joshua Hykes, Rodolfo Ferrer and Joel Rhodes
- 11:20-11:40** ANALYSIS OF THE SPERT-III E-CORE EXPERIMENTS USING CASMO5 AND TRACE/PARCS CODES WITH JENDL-4.0 LIBRARY  
Tatsuya Fujita and Tomohiro Sakai
- 11:40-12:00** AN EXTENSION OF THE VERIFICATION AND VALIDATION OF SUPERMC WITH CANDU-TYPE REACTOR  
Quan Gan, Bin Wu, Shengpeng Yu, Lijuan Hao, and Jing Song
- 12:00-12:20** PWR NEUTRON NOISE PATTERN FROM COHERENT FUEL ASSEMBLY DEFLECTION  
M. Viebach, C. Lange, N. Bernt, M. Seidl, D. Hennig, and A. Hurtado

### Track 2 Deterministic Transport Theory Session 4

Chair

Location: Maya 3

- 10:20-10:40** PERFORMANCE COMPARISON OF DIFFERENT APPROXIMATION SCHEMES IN MATRIX MOC  
Zheng Yong, Peng Min-Jun
- 10:40-11:00** RESOLVING SUBGRID HETEROGENEITY USING THE SUBRAY METHOD OF CHARACTERISTICS  
Aaron M. Graham, Benjamin S. Collins, Thomas J. Downar
- 11:00-11:20** SENSITIVITY ANALYSIS OF OMEGA-EIGENVALUE BASED ON FIRST-ORDER PERTURBATION THEORY  
Tomohiro Endo, Akio Yamamoto
- 11:20-11:40** IMPROVED LEAKAGE SPLITTING METHOD FOR THE 2D/1D TRANSPORT CALCULATION  
Chen Zhao, Zhouyu Liu, Liangzhi Cao, Hongchun Wu
- 11:40-12:00** STUDY ON CELL MODULAR NONUNIFORM RAY TRACING USING THE MACRO-BAND APPROACH FOR THE METHOD OF CHARACTERISTICS  
Peng Lianghui, Yeoh Eing Yee, Li Linsen, Chen Yaodong
- 12:00-12:20** VARIATIONAL NODAL METHOD BASED ON THE SPN AND SYMMETRY GROUP THEORIES  
Yunzhao Li, Zhipeng Li and Hongchun Wu
- 12:20-12:40** A MODIFIED FORM OF THE SAAF TRANSPORT EQUATION WITH FULLY VOID-COMPATIBLE FEATURE  
Zeyun Wu; Samaneh Rakhshan Pouri

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## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 6 Reactor Concepts and Designs Session 1

#### Chair

Location: Maya 4

- 10:20-10:40** TRANSIENT FISSION MATRIX APPROACH FOR ASSESSING COMPLEX KINETICS BEHAVIOR IN THE ZEPHYR ZPR COUPLED CORE CONFIGURATIONS  
Patrick BLAISE, Paul ROS, Axel LAUREAU, Pierre LECONTE
- 10:40-11:00** COMPARISON OF NEUTRONIC PERFORMANCE CHARACTERISTICS OF THE PROPOSED NIST REACTOR WITH DIFFERENT LEU FUELS  
Danyal J. Turkoglu, Zeyun Wu, Robert E. Williams and Thomas H. Newton
- 11:00-11:20** ALTERNATIVE DESIGN OPTIONS FOR SMALL SAFE ULTRA-LONG-LIFE SODIUM COOLED FAST REACTOR CORE USING HETEROGENEOUS ASSEMBLIES  
Geon Hee Jung, Yeonguk Jo, Ser Gi Hong
- 11:20-11:40** RADEC - RADIALLY AND AXIALLY DESIGNED CORES FOR PEBBLE BED NUCLEAR REACTOR  
R. Škoda, J. Jiříčková, M. Lovecký and J. Závorka
- 11:40-12:00** PRELIMINARY NEUTRONIC DESIGN STUDY OF RCCA AND GRCA UTILIZED IN LEUC FCM LOADED PWR  
M. Qasim Awan, Liangzhi Cao, Hongchun Wu and Zhifeng Li
- 12:00-12:20** THE OPTIMIZED CONCEPTUAL SOLUBLE BORON FREE SMALL MODULAR REACTOR USING SOLID PYREX AND GADOLINIA RODS  
Gonghoon Bae, Jinsun Kim, Do Ik Chang and Kibong Seong
- 12:20-12:40** PARAMETRIC ANALYSIS OF SINGLE FECRAL ROD AND ASSEMBLY WITHIN A FULL CORE PWR ENVIRONMENT  
Ryan T. Sweet, Troy A. Eckleberry, G. Ivan Maldonado, and Brian D. Wirth

### Track 8 Transient and Safety Analysis Session 3

#### Chair

Location: Mexico - Cozumel

- 10:20-10:40** JFNK PRECONDITIONING FOR COUPLED BWR CALCULATIONS  
Christophe Demazière, Sebastian González-Pintor and Anders Ålund
- 10:40-11:00** VALIDATION STUDY OF FUEL ASSEMBLY MODEL OF VVER 1000 REACTOR BY TRITON  
Jitka Vojackova, Kamil Stevanka, Petr Heralecky, Karel Katovsky, Stepan Foral
- 11:00-11:20** PSEUDO MESH FOR ADJOINT WEIGHT FLUX IN PREDICTOR CORRECTOR QUASI STATIC KINETICS CALCULATION IN MONTE CARLO CODE RMC  
Xiaotong SHANG, Qi XU, and Kan WANG
- 11:20-11:40** SELF-LIMITING TRANSIENT PULSE SIMULATION METHOD EXHIBITING TIME LAG PHENOMENON USING MAMMOTH  
Adam X. Zabriskie, Benjamin Baker, Javier Ortensi, Mark D. DeHart, and Wade Marcum
- 11:40-12:00** TRANSIENT MULTILEVEL SCHEME WITH ONE GROUP CMFD ACCELERATION  
Qicang Shen, Brendan Kochunas, Yunxlin Xu and Thomas Downar
- 12:00-12:20** 3-D COUPLED PARCS/ATHLET SIMULATION OF SFR USING EXPLICIT RADIAL EXPANSION MODEL  
J. Bousquet, A. Seubert, P. Sarkadi
- 12:20-12:40** UNPROTECTED TRANSIENTS IN SEALER: A SMALL LEAD-COOLED REACTOR FOR COMMERCIAL POWER PRODUCTION IN ARCTIC REGIONS  
Janne Wallenius, Sara Bortot, Ignas Mickus
- 12:40-13:00** IMPACT OF WATER ADDITION ON HYDROGEN GENERATION DURING DIFFERENT STAGES OF A BWR SEVERE ACCIDENT  
Javier Ortiz-Villafuerte, Jorge Viáis-Juárez, Enrique Araiza-Martínez, Rodolfo Amador

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## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 7

Chair

Location: Maya 1

- 13:30-13:50** AN ALTERNATIVE ALGORITHM FOR THE LINEARIZATION PROCESS OF TRANSMUTATION AND DECAY NETWORKS  
Carlos Antonio Cruz López, Juan Luis François
- 13:50-14:10** ENERGY MODELS FOR THE EVALUATION OF THE EFFECTIVE NEUTRON LIFETIME  
S. Dulla, P. Ravetto, P. Saracco, W. Borreani, M. Carta, V. Fabrizio, V. Peluso
- 14:10-14:30** AN INVESTIGATION OF DISTRIBUTED SELF-SHIELDING EFFECTS WITH THE TONE'S METHOD  
Alain Hébert
- 14:30-14:50** IMPROVEMENTS IN THE POLARIS IMPLEMENTATION OF THE EMBEDDED SELF-SHIELDING METHOD  
Cole A. Gentry, Matthew A. Jessee, Kang Seog Kim
- 14:50-15:10** NUCLEAR DESIGN PARAMETER EVALUATION OF 2-STEP PROCEDURE BY DECART FOR A SMR CORE  
Jin Young Cho, Kyunghoon Lee and Jae Seung Song
- 15:10-15:30** A REDUCED SOR PRECONDITIONER FOR THE GMRES SOLUTION OF THE COARSE MESH FINITE DIFFERENCE EQUATIONS  
Yunlin Xu, Chen Hao, Thomas J. Downar

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### Track 1 Reactor Analysis Methods Session 8

Chair

Location: Maya 2

- 13:30-13:50** SOLVING COUPLED NEUTRON TRANSPORT AND HEAT CONDUCTION WITH TEMPERATURE-DEPENDENT THERMAL CONDUCTIVITY USING THE LATTICE BOLTZMANN FRAMEWORK  
Min-Tsung Kao and Rizwan-Uddin
- 13:50-14:10** ASSESSMENT OF NUMERICAL METHODS FOR THE EVALUATION OF HIGHER-ORDER HARMONICS IN DIFFUSION THEORY  
N. Abrate, S. Dulla, P. Ravetto, G. Bruna
- 14:10-14:30** A BLOCK INVERSE-FREE PRECONDITIONED ARNOLDI METHOD FOR THE COMPUTATION OF LAMBDA MODES OF A NUCLEAR POWER REACTOR  
A. Carreño, A. Vidal-Ferrándiz, D. Ginestar, G. Verdú
- 14:30-14:50** ACCURACY IMPROVEMENT OF AXIAL POWER SHAPE RECONSTRUCTION OF GMDH ALGORITHM APPLYING PATTERN RECOGNITION TECHNIC  
Sungpil Yum, Ho Cheol Shin, Peng Zhang, Jiwon Choe, and Deokjung Lee
- 14:50-15:10** SOLUTION OF THE NEUTRON DIFFUSION EQUATION WITH THE PERIDYNAMIC DIFFERENTIAL OPERATOR  
Deepak Behera, Barry Ganapol, and Erdogan Madenci
- 15:10-15:30** ANALYSIS OF THE BEAVRS CYCLE 1 USING THE DRAGON/PARCS CODE SEQUENCE  
Luca LIPONI and Julien TAFORÉAU

## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 3 Monte Carlo Methods Session 3

Chair

Location: Maya 3

- 13:30-13:50** CALCULATION OF ADJOINT-WEIGHTED REACTOR KINETICS PARAMETERS IN OPENMC  
Xingjie Peng, Benoit Forget, Kord Smith
- 13:50-14:10** VARIANCE REDUCTION METHODS FOR COMPUTING THE EFFECTIVE DELAYED NEUTRON FRACTION AND ITS SENSITIVITIES TO VELOCITY IN FLUID FUEL SYSTEMS  
Timothy P. Burke, Brian C. Kiedrowski
- 14:10-14:30** GENERATION OF CRITICAL BUCKLING AND ESTIMATION OF THEIR UNCERTAINTIES BY THE B1 THEORY-AUGMENTED MONTE CARLO METHOD  
Ho Jin Park and Jin Young Cho
- 14:30-14:50** PERTURBATION-BASED COUPLING OF MONTE CARLO WITH DEPLETION FOR MULTIPLE BURNABLE REGIONS  
Paul Cosgrove, Eugene Shwageraus, Geoff Parks
- 14:50-15:10** FASTER MONTE CARLO MULTIPHYSICS USING TEMPERATURE DERIVATIVES  
Sterling Harper, Kord Smith, Benoit Forget
- 15:10-15:30** ACTIVATION CALCULATION BASED ON EXPONENTIAL TRANSFORMATION CHEBYSHEV RATIONAL APPROXIMATION METHOD  
Jing Song, Ljuan Hao, Guangyao Sun, Guomin Sun, and Shengpeng Yu

### Track 5 Reactor Physics Experiments and Nuclear Data Session 3

Chair

Location: Maya 4

- 13:30-13:50** TRANSPORT AND S/U ANALYSIS OF THE ASPIS-IRON88 BENCHMARK USING RECENT AND OLDER IRON CROSS-SECTION EVALUATIONS  
I. Kodeli
- 13:50-14:10** 1959-2017: HIGHLIGHTS OF SIXTY YEARS OF PILE-OSCILLATION EXPERIMENTS IN THE MINERVE FACILITY FOR NUCLEAR DATA IMPROVEMENT  
P. Leconte, P. Blaise, B. Geslot, A. Gruel
- 14:10-14:30** ANALYSIS ON PHYSICAL START-UP EXPERIMENTS OF CHINA EXPERIMENTAL FAST REACTOR  
Xingkai HUO, Hong YU, Yun HU, Xiaoyan YANG, Yong YANG, Yiyu Chen, Keyuan ZHOU, Zhengdong FAN, Xiaoliang CHEN, Li XU, Jian ZHANG
- 14:30-14:50** VALIDATION OF LWR REACTIVITY VERSUS REACTOR PERIOD. FEEDBACK ON THE DELAYED NEUTRON DATA  
A. Santamarina, V. Pascal, G. Truchet, J-F. Vidal
- 14:50-15:10** IRRADIATION INDUCED REACTIVITY IN MONJU ZERO POWER OPERATION  
Kazuya Takano, Shuhei Maruyama, Taira Hazama and Shin Usami
- 15:10-15:30** REACTIVITY MEASUREMENT WITH THRESHOLD FISSION CHAMBERS IN THE MYRRHA MOCK-UP FAST SUBCRITICAL REACTOR VENUS-F  
J.-L. Lecouey, A. Billebaud, A. Kochetkov, A. Krása, P. Baeten, S. Chabod, T. Chevret, F.-R. Lecolley, G. Lehaut, N. Marie, N. Messaoudi, G. Vittiglio and J. Wagemans

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## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### SS 1 Uncertainty Analysis and Reduced Order Modeling Session 1

Chair

Location: Mexico - Cozumel

- 13:30-13:50** SECOND-ORDER ADJOINT SENSITIVITY ANALYSIS OF A GENERIC EVOLUTION SYSTEM WITH APPLICATIONS TO RADIATION TRANSPORT AND FUEL REPROCESSING  
Dan G. Cacuci and Madalina C. Badea
- 13:50-14:10** UNCERTAINTY ASSESSMENT ON THE PREDICTION OF THE CABRI POWER TRANSIENTS  
Olivier Clamens, Patrick Blaise, Jean-Pascal Hudelot, Johann Lecerf, Bruno Biard
- 14:10-14:30** FURTHER DEVELOPMENT OF FEW-GROUP CROSS-SECTION UNCERTAINTY QUANTIFICATION TECHNIQUES FOR CORE SIMULATION  
Dongli Huang, Hany S. Abdel-Khalik, Ondrej Chvala and G. Ivan Maldonado
- 14:30-14:50** DATA-DRIVEN SURROGATE MODEL TO PREDICT ISOTOPIC COMPOSITION USING DYNAMIC MODE DECOMPOSITION  
Mohammad Abdo, Rabab elzohery, Jeremy Roberts
- 14:50-15:10** DEVELOPMENT OF THE UNCERTAINTY QUANTIFICATION METHOD OF ACTIVATION IN REACTOR STRUCTURES USING REDUCED-ORDER MODELING  
Kimihiro Yokoi, Tomohiro Endo, Akio Yamamoto, Koji Hayashi, Ryoji Mizuno, Yoshio Kimura
- 15:10-15:30** NUCLEAR DATA UNCERTAINTY PROPAGATION WITH HELIOS2 AND XSUSA FOR LWR SYSTEMS  
Jeremy Bousquet, Kiril Velkov, Winfried Zwermann, Charles Wemple and Teodosi Simeonov

### Track 1 Reactor Analysis Methods Session 9

Chair

Location: Maya 1

- 15:50-16:10** METHODS AND VERIFICATION OF 3D DIRECT REACTOR CALCULATION CODE KYCORE  
Xiao Tang, Qing Li, Xiaoming Chai, Xiaolan Tu, Kan Wang
- 16:10-16:30** ADVANCED CROSS-SECTION RE-HOMOGENIZATION BASED ON 3D PSEUDO PIN-BY-PIN CALCULATION (P3C) METHODOLOGY  
Baocheng Zhang, Boyan D Ivanov, Harish C Huria
- 16:30-16:50** VALIDATION OF APOLLO2 TOWARDS MONTE CARLO TRIPOLI-4® THROUGHOUT IRRADIATION: TRANSPOSITION OF THE PROCESS ON CRITICAL FUEL ASSEMBLY CONFIGURATIONS  
Frédéric DAMIAN, Antoine COLLIN, Nicolas GERARD-CASTAING, Charles JOUGLARD, Andrea ZOIA
- 16:50-17:10** SCALE 6.2 LATTICEPHYSICS CODE ACCURACY ASSESSMENT FOR LIGHT WATER REACTOR FUEL  
U. Mertyurek, B. R. Betzler, M. A. Jessee, S. M. Bowman
- 17:10-17:30** HIGH FLUX ISOTOPE REACTOR LOW-ENRICHED URANIUM CORE DESIGN OPTIMIZATION STUDIES  
B. R. Betzler, D. Chandler, D. H. Cook, E. E. Davidson (nee Sunny), and G. Ilas
- 17:30-17:50** IMPROVED SUBGROUP METHOD FOR RIM EFFECT IN RESONANCE CALCULATION  
Song Li, Qian Zhang, Qiang Zhao, Zhijian Zhang, Liangzhi Cao, Hongchun Wu

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## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 10

Chair

Location: Maya 2

- 15:50-16:10** ESTIMATION OF REGION-WISE EVEN-PARITY DISCONTINUITY FACTOR FOR MOC THROUGH ITERATIVE PROCEDURE  
Akio YAMAMOTO, Akinori GIHO, Tomohiro ENDO
- 16:10-16:30** FUEL ASSEMBLY BOWING: IMPACT OF INTER-ASSEMBLY GAP ON POWER DISTRIBUTION  
Matias Zilly, Kevin Pletz, Friederike Bostelmann, Alexander Aures, Kiril Velkov, Uwe Stoll
- 16:30-16:50** NODAL CROSS SECTION CORRECTIONS WITH THE APEC METHOD IN AN SMR CORE ANALYSIS  
Kyunghoon Lee, Woosong Kim, Yonghee Kim
- 16:50-17:10** IMPLEMENTATION OF SECOND-ORDER DISCONTINUITY FACTOR FOR SIMPLIFIED P3 THEORY IN NEM  
Yuchao Xu, Jason Hou, Kostadin N. Ivanov
- 17:10-17:30** COMPARATIVE STUDY OF MONTE CARLO BURNUP SCHEMES FOR FULL CORE CALCULATIONS  
Andrew Johnson and Dan Kotlyar
- 17:30-17:50** JMCT V2.0 MONTE CARLO CODE WITH INTEGRATED NUCLEAR SYSTEM FEEDBACK FOR SIMULATION OF BEAVRS MODEL  
Li Deng, Gang Li, Baoyin Zhang, Rui Li, Dunfu Shi, Yuangang Fu, Danhu Shangguan, Zehua Hu, Lingyu Zhang, Liu Peng

### Track 3 Monte Carlo Methods Session 4

Chair

Location: Maya 3

- 15:50-16:10** ASSESSMENT OF SERPENT CROSS SECTIONS OF THE SECOND GENERATION FUEL OF TVEL FOR LOVIISA NPP  
Jaakko Kuopanportti, Simo Saarinen, Jaakko Leppänen
- 16:10-16:30** SERPENT SOLUTION OF THE X2 VVER-1000 BENCHMARK FRESH CORE EXPERIMENTS  
Y. Bilodid, E. Fridman
- 16:30-16:50** EXTENSION OF SERPENT2/SUBCHANFLOW COUPLING FOR HEXAGONAL FUEL ASSEMBLIES  
Yousef Alzaben, Claus-Robert Ziegahn, and Victor Hugo Sanchez-Espinoza
- 16:50-17:10** CONTINUOUS TEMPERATURE FEEDBACK IN COUPLED RMC/CTF  
Shichang Liu, Zhen Luo, Xiaoyu Guo, Ganglin Yu, Zeguang Li and Kan Wang
- 17:10-17:30** THE VERIFICATION OF MCS COUPLED WITH CTF AND FRAPCON  
Jiankai Yu, Hanjoo Kim, Hyunsuk Lee, Peng Zhang, Deokjung Lee
- 17:30-17:50** THE INFLUENCE OF FULL-CORE DEFLECTION TO THE NODALIZED CROSS SECTIONS  
Nico Bernt, Carsten Lange, Marco Viebach, Dieter Hennig, Antonio Hurtado

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## TUESDAY, APRIL 24

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### SS 4 Hybrid Monte Carlo and Deterministic Methods Session 2

**Chair**

**Location:** Maya 4

- 15:50-16:10** A NEW FISSION MATRIX CORRECTION METHOD TO ESTIMATE THE SOURCE DISTRIBUTION IN NUCLEAR REACTOR CORE  
Donghao He and William J Walters
- 16:10-16:30** A NOVEL DETECTOR RESPONSE FORMULATION FOR RAPID  
Meng-Jen Wang and Alireza Haghghat
- 16:30-16:50** METHODOLOGY FOR OPTIMIZATION OF THE MODERATOR PARAMETERS FOR A D-D NEUTRON GENERATOR USING ARTIFICIAL NEURAL NETWORKS (ANNs)  
K. Hossny, M. AlKammash, A. Hamdy, and Walid A. Metwally
- 16:50-17:10** MONTE CARLO ADJOINT EIGENMODE CALCULATION WITH THE APPLICATION OF MODIFIED POWER METHOD  
Peng Zhang, Hyunsuk Lee, Yunki Cho and Deokjung Lee

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### SS 1 Uncertainty Analysis and Reduced Order Modeling Session 2

**Chair**

**Location:** Mexico - Cozumel

- 15:50-16:10** UNCERTAINTY QUANTIFICATION OF ABR TRANSIENT SAFETY ANALYSIS – NUCLEAR DATA UNCERTAINTIES  
N. E. Stauff, K. Zeng, G. Zhang, G. Aliberti, J. Hou, T. Fanning, and T. K. Kim
- 16:10-16:30** CODE VALIDATION BASED ON THE TECHNIQUE OF SENSITIVITY AND UNCERTAINTY ANALYSIS  
Chenghui Wan, Liangzhi Cao, Jian Zhang, Youqi Zheng, Li Xu, Hongchun Wu
- 16:30-16:50** UNCERTAINTY PROPAGATION OF DOUBLE-DIFFERENTIAL SCATTERING CROSS SECTION IN FAST FLUENCE CALCULATION FOR THE PWR SURVEILLANCE CAPSULES  
L. Clouvel, P. Mosca, and J.M. Martinez
- 16:50-17:10** UNCERTAINTY QUANTIFICATION OF TREAT TRANSIENT TEST #2857 WITH SPECTRAL PROJECTION TECHNIQUES  
Haining Zhou, Volkan Seker, Thomas Downar



## WEDNESDAY, APRIL 25

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 11

Chair

Location: Maya 1

- 8:00-8:20** EFFECTS OF A MULTI-PHYSICS COUPLING APPROACH IN MONTE CARLO BURNUP CALCULATIONS  
Christian Castagna, Eric Cervi, Stefano Lorenzi, Antonio Cammi, Davide Chiesa, Massimiliano Nastasi, Monica Sisti, Ezio Previtali
- 8:20-8:40** ENERGY DEPOSITION ANALYSIS FOR VERA PROGRESSION PROBLEMS BY MCNP  
Xinyan Wang, Yuxuan Liu, William Martin, Kang Seog Kim
- 8:40-9:00** HIGHER RESOLUTION RADIAL REFLECTOR MODELING CAPABILITIES IN IMPACT  
S. Stimpson, B. Collins, A. Godfrey, D. Jabaay, R. Ratnayake
- 9:00-9:20** GENERATION AND VERIFICATION OF THE MULTI-GROUP CONSTANT WITH DISCRETE SCATTERING ANGLE BASED ON MONTE CARLO METHOD  
Li Yaodong, Yu Ganglin, Li Wanlin, Wang Kan
- 9:20-9:40** PRELIMINARY COUPLING OF OPENMC AND NEK5000 WITHIN THE MOOSE FRAMEWORK  
April Novak, Paul Romano, Brycen Wendt, Ron Rahaman, Elia Merzari, Leslie Kerby, Code Permann, Rich Martineau, and Rachel Slaybaugh
- 9:40-10:00** IMPROVEMENT OF CAPP CODE FOR VHTRS: TRANSIENT ANALYSIS AND REDUCTION OF CONTROL ROD CUSPING EFFECT  
Seungsu Yuk, Jin Young Cho, Chan Keun Jo

### Track 3 Monte Carlo Methods Session 5

Chair

Location: Maya 2

- 8:00-8:20** DEVELOPMENT AND VERIFICATION OF FULL-SCALE MODEL OF SMALL MODULAR REACTOR CORE FOR BURNUP CALCULATION BY MONTE-CARLO METHOD  
M.Bolshukhin, O.Morozov, S.Polyanskikh, V.Galitskikh
- 8:20-8:40** VERIFICATION OF MCU AND CASMO5 COMPUTER CODES BASED ON DEPLETION OF DIFFERENT TYPES OF FUEL ASSEMBLIES FOR PWR  
L. Levanov, I. Dikarev
- 8:40-9:00** REAL TIME MULTI-TEMPERATURE CROSS SECTIONS GENERATION METHOD IN SUPERMC FOR MULTIPHYSICS SIMULATION OF NUCLEAR REACTORS  
Lijuan Hao, Jun Zou, Zhengyun Dong, Bin Wu, and Jing Song
- 9:00-9:20** EFFECTS OF FUEL TEMPERATURE HISTORY APPROXIMATIONS ON NEUTRONICS PROPERTIES OF A BWR ASSEMBLY  
V. Valtavirta and J. Leppanen
- 9:20-9:40** NAGRA ACTIVATION ANALYSIS FOR THE OPTIMIZATION OF NPP DECOMMISSIONING AND SEGMENTATION STRATEGY  
V. Bykov, S. Mosher, B. Volmert, A. Scolaro, M. Pantelias, A. Pautz
- 9:40-10:00** TOWARDS A COMPREHENSIVE PHYSICAL MODELLING OF FISSION CHAMBERS  
Jan Grzegorz Hajnrych , Philippe Filliatre, and Benoit Gesloti

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## WEDNESDAY, APRIL 25

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 4 Fuel Cycle and Nuclear Critically Safety Session 2

Chair

Location: Maya 3

- 8:00-8:20** GLOBAL AND FLEXIBLE MODELS FOR SODIUM-COOLED FAST REACTORS IN FUEL CYCLE SIMULATIONS  
M. Ernoult, X. Doligez, N. Thiolliere, A.A. Zakari-Issoufou, A. Bidaud, S. Bouneau, J.B. Clavel, F. Courtin, S. David, A. Somaini
- 8:20-8:40** PHYSICS CHARACTERISTICS OF INTERNALLY COOLED ANNULAR FUEL FOR POTENTIAL APPLICATION IN PRESSURE TUBE HEAVY WATER REACTORS  
B.P. Bromley, K. Groves, A.V. Colton, and S. Golesorkhi
- 8:40-9:00** NEUTRONIC STUDY OF THE ASTRID SODIUM-COOLED FAST REACTOR WITH THORIUM BASED FUEL  
Daniel Escorcia Ortiz, Juan Luis Francois
- 9:00-9:20** NUCLEAR FUEL CYCLE SIMULATION CODE; ATRUNCYS  
Satoshi Wada, Tsukasa Sugita, Kenichi Yoshioka, Rei Kimura, Kouji Hiraiwa and Rie Aizawa
- 9:20-9:40** VALUE ADDED WHEN USING CROSS SECTIONS FOR FUEL CYCLE ANALYSIS  
Josh Peterson-Droogh, Robert Gregg
- 9:40-10:00** TOWARDS A VALIDATION OF THE BURN-UP CODE MOTIVE  
Volker Hannstein, Matthias Behler, Fabian Sommer

### Track 5 Reactor Physics Experiments and Nuclear Data Session 4

Chair

Location: Maya 4

- 8:00-8:20** MODELING REPRESENTATIVE GEN-IV MOLTEN FUEL REACTIVITY EFFECTS IN THE ZEPHYR FAST/THERMAL COUPLED ZPR  
Marat Margulis, Patrick Blaise and Erez Gilad
- 8:20-8:40** ENDF/B-VII DEPLETION LIBRARY COMPRESSION TO OPTIMIZE THE COMPUTATIONAL EFFICIENCY IN STREAM CODE  
Khang Hoang Nhat Nguyen, Sooyoung Choi, Matthieu Lemaire and Deokjung Lee
- 8:40-9:00** COMPARISON OF METHODS FOR DETERMINING MULTIPLICATION IN SUBCRITICAL CONFIGURATIONS OF A PLUTONIUM SYSTEM  
Joetta Goda, Theresa Cutler, Travis Grove, Jesson Hutchinson, George McKenzie, Alex McSpaden, Mark Nelson, and Rene Sanchez
- 9:00-9:20** NUCLEAR DATA-INDUCED UNCERTAINTY OF  $k_{eff}$  USING HIGHLY-ENRICHED URANIUM AT KYOTO UNIVERSITY CRITICAL ASSEMBLY  
M. Yamanaka, C. H. Pyeon
- 9:20-9:40** UPDATE OF DATA LIBRARY FOR THE NUCLIDE INVENTORY CODE NUIIT  
Jian Li, Ding She, Lei Shi
- 9:40-10:00** THE 2018 EDITION OF THE IRPHEP HANDBOOK  
John D. Bess, Tatiana Ivanova, Ian Hill, Margaret A. Marshall

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## WEDNESDAY, APRIL 25

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 9 Education, Research Reactors and Spallation Sources Physics Session 1

#### Chair

Location: Mexico - Cozumel

- 8:00-8:20** DOES PARTICIPATION AFFECT PERFORMANCE IN A FLIPPED ONLINE COURSE?  
Christophe Demazière, Christian Stöhr and Tom Adawi
- 8:20-8:40** NOVEL MEASUREMENTS OF FUEL DEPLETION OVER LONG TERM OPERATION OF THE IRR1 REACTOR VALIDATING WHOLE-CORE MONTE-CARLO SIMULATIONS  
A. Krakovich, I. Neder, U. Steinitz, O. Aviv, L. Danon, K. Ben-Meir, N. Hazensprung
- 8:40-9:00** PREDICTION OF COOLANT TEMPERATURES AND FLUID FLOW PATTERNS WITHIN A TRIGA REACTOR CORE USING RELAP5/MOD3.3 AND COMSOL CODES  
Ahmed K. Alkaabi and Jeffrey C. King
- 9:00-9:20** NEUTRONIC AND THERMAL-HYDRAULIC FEASIBILITY STUDIES FOR HIGH FLUX ISOTOPE REACTOR CONVERSION TO LOW-ENRICHED URANIUM U3SI2-AL FUEL  
David Chandler, Ben Betzler, David Cook, Germina Ilas, and David Renfro
- 9:20-9:40** IMPLEMENTATION OF AN ON-LINE FISSION GAS RELEASE MEASUREMENT FACILITY AT THE PULSTAR REACTOR  
M. Lim, S. Saxena, and A.I. Hawari
- 9:40-10:00** NEW MATRIX COEFFICIENTS FOR THE LOBE POWER CALCULATION AND INDICATION SYSTEM IN THE ADVANCED TEST REACTOR  
Nathan Manwaring

### Track 1 Reactor Analysis Methods Session 12

#### Chair

Location: Maya 1

- 10:20-10:40** DEVELOPMENT OF A DATA-DRIVEN APPROACH BASED ON KALMAN FILTERING FOR CFD REACTOR ANALYSIS  
Carolina Introini, Antonio Cammi, Stefano Lorenzi, Davide Baroli, Bernhard Peters
- 10:40-11:00** DELAYED FISSION ENERGY EFFECT ON LWR NORMAL OPERATION AND TRANSIENTS  
Yuxuan Liu, William Martin and Thomas Downar
- 11:00-11:20** COMPARATIVE STUDY OF NEUTRON NOISE CALCULATIONS USING THE NEUTRON KINETICS CODE PARCS AND THE NEUTRON NOISE SIMULATOR CORE SIM  
N. Olmo-Juan, C. Demazière, T. Barrachina, R. Miró and G. Verdú
- 11:20-11:40** POINT KINETIC EQUATION FOR SUBCRITICAL SYSTEM WITH EXTERNAL SOURCE  
Chi Zhang, Zhaodong Xia, Qingfu Zhu
- 11:40-12:00** VALIDATION OF SARAX CODE SYSTEM USING JOYO MK-I EXPERIMENTS  
Zi'an Zhai, Liangzhi Cao, Youqi Zheng
- 12:00-12:20** ANALYSIS OF THE BEAVRS BENCHMARK USING THE TRITON/PARCS/PATHS TWO-STEP SEQUENCE  
Daniel O'Grady, Tomasz Kozlowski, Nathanael Hudson

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## WEDNESDAY, APRIL 25

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### Track 3 Monte Carlo Methods Session 6

Chair

Location: Maya 2

- 10:20-10:40** GROUP-WISE TALLY SCHEME OF INCREMENTAL MIGRATION AREA FOR CUMULATIVE MIGRATION METHOD  
Zhaoyuan Liu, Kord Smith and Benoit Forget
- 10:40-11:00** RESEARCH ON INFLUENCE OF CELL RADIAL PARTITION OF MONTE CARLO BURNUP CALCULATION BASED ON RMC  
Wanlin Li, Zeguang Li, Ganglin Yu, Yaodong Li, Kan Wang
- 11:00-11:20** A STUDY ON DETERMINISTIC TRUNCATION OF MONTE CARLO TRANSPORT SOLUTION  
Inhyung Kim and Yonghee Kim
- 11:20-11:40** PERFORMANCE OPTIMIZATION OF LARGE SCALE PARALLEL SIMULATIONS ON MONTE CARLO PARTICLE TRANSPORT CODE  
Baoyin Zhang, Wei Wang, Gang Li, Li Deng
- 11:40-12:00** THE DEVELOPMENT OF JMCT ON THERMAL HYDRAULICS FEEDBACK  
Shi Dunfu, Liu Peng, Li Kang, Li Rui, Li Gang, Fu Yuanguang, Deng Li
- 12:00-12:20** VALIDATION OF THE INTERACTION PHYSICS OF GUARDYAN A NOVEL GPU-BASED MONTE CARLO CODE FOR SHORT TIME SCALE REACTOR TRANSIENTS  
D. Legrady, A. Claret, B. Molnar, G. Tolnai
- 12:20-12:40** A CONSISTENT MONTE CARLO TREATMENT OF RADIATION RESPONSES IN AND AROUND CRITICAL CONFIGURATIONS.  
Kenneth W. Burn; Patrizio Console Camprini

### Track 4 Fuel Cycle and Nuclear Critically Safety Session 3

Chair

Location: Maya 3

- 10:20-10:40** PROLIFERATION-PROTECTED AND ULTRA-HIGH BURN-UP REACTOR FUEL PRODUCED IN THORIUM BLANKET OF FUSION NEUTRON SOURCE  
Kulikov G.G., Shmelev A.N., Kulikov E.G. and Apse V.A.
- 10:40-11:00** ANALYSIS OF PLUTONIUM AND MINOR ACTINIDE RECYCLING IN BWR FUEL ASSEMBLIES  
Gustavo Alonso, Eduardo Martinez, Ramon Ramirez
- 11:00-11:20** ANALYSIS OF THE USE OF THORIUM FUEL IN THE EUROPEAN 2400 MWTH GAS-COOLED FAST REACTOR.  
Yrobel Lima Reinaldo and Juan Luis Francois
- 11:20-11:40** MINOR ACTINIDES INCINERATION IN A SODIUM FAST REACTOR  
Jose Ramon Ramirez, Raul Pineda A., Gustavo Alonso, Javier Palacios
- 11:40-12:00** A CONSERVATIVE APPROACH TO ACCOUNT FOR USED FAST-NEUTRON REACTOR BLANKETS IN CRITICALITY-SAFETY STUDIES  
C. Carmouze, W. Assal, G. Grassi
- 12:00-12:20** THERMAL MODELING AND EXPERIMENTAL DATA COMPARISON FOR PLUTONIUM-FUELED CRITICAL EXPERIMENTS  
C. M. Percher, N. J. Killingsworth, S. S. Kim, J. C. Scorby, D. P. Heinrichs, R. G. Sanchez, T. J. Grove

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## WEDNESDAY, APRIL 25

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### Track 10 Radiation Applications and Nuclear Safeguards Session 1

#### Chair

Location: Maya 4

- 10:20-10:40** INVERSE ESTIMATION METHODS OF UNKNOWN RADIOACTIVE SOURCE FOR FUEL DEBRIS SEARCH  
Shinji SUGAYA, Tomohiro ENDO, Akio YAMAMOTO
- 10:40-11:00** SAFEGUARDS IMPACTS OF ANTINEUTRINOS FROM ACTIVATION OF STRUCTURAL ELEMENTS IN POWER AND RESEARCH REACTORS  
Conant, H. Mumm, and A. Erickson
- 11:00-11:20** CAD-BASED INTERNAL COUPLED SHUTDOWN DOSE RATE CALCULATION IN SUPERMC  
Guomin Sun, Hancheng Song, Bin Wu, Quan Gan, Lijuan Hao, and Jing Song
- 11:20-11:40** PARTIAL DEFECT IDENTIFICATION IN PWR SPENT FUEL USING PASSIVE GAMMA SPECTROSCOPY  
Zs. Elter, L. Caldeira Balkeståhl, S. Grape, C. Hellesen
- 11:40-12:00** INVERSE ESTIMATION METHODS OF UNKNOWN RADIOACTIVE SOURCE FOR FUEL DEBRIS SEARCH  
Shinji SUGAYA, Tomohiro ENDO, Akio YAMAMOTO
- 12:00-12:20** A STUDY ON REORGANIZATION OF LEGAL FRAMEWORK AND DEVELOPMENT OF RESPONSE TECHNIQUES FOR NUCLEAR FORENSICS IN ROK  
Sujin Park, Jong-Ho Yoon, Kwan Kyoo Choe, Seung Ho Jeong
- 12:20-12:40** UTILITY OF PHYSICAL PROPERTIES AS NUCLEAR FORENSICS SIGNATURES: BASED ON QC DATA  
YuJeong Choi, Hana Seo, and SeungHo Jeong

### Track 9 Education, Research Reactors and Spallation Sources Physics Session 2

#### Chair

Location: Mexico - Cozumel

- 10:20-10:40** PC BASED RESEARCH REACTOR  
Luka Snoj, Dan Toškan, and Jan Malec
- 10:40-11:00** THE EDUCATION AND RESEARCH REACTOR AKR-2 AND ITS EXPERIMENTAL PROGRAMME FOR EDUCATION  
Carsten Lange, Nico Bernt
- 11:00-11:20** VERIFICATION OF MCS MONTE CARLO CODE FOR THE JRTR RESEARCH REACTOR  
Vutheam Dos, Hyunsuk Lee, Yunki Jo, Chang Je Park and Deokjung Lee
- 11:20-11:40** IMPROVED MODELING OF THE UNIVERSITY OF WISCONSIN NUCLEAR REACTOR BY AUTOMATIC GENERATION OF COMPUTATIONAL MODELS  
Young-Hui Park, Alexander Swenson, Paul P.H. Wilson, Ye Cheng, Richard L. Reed, and Jeremy A. Roberts
- 11:40-12:00** ASSESSMENT OF NUCLEAR TRANSMUTATION WITH USING SNT CODE  
A.V. Maksimushkina, Y. A. Korovin, T.A. Frolova
- 12:00-12:20** CURRENT NEUTRONIC CALCULATION TECHNIQUES FOR MODELING THE PRODUCTION OF IR-192 IN HFIR  
Josh Peterson-Droogh and Richard Howard

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## WEDNESDAY, APRIL 25

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### Track 1 Reactor Analysis Methods Session 13

Chair

Location: Maya 1

- 13:30-13:50** PROGRESS IN VALIDATION OF MPACT WITH CRITICAL EXPERIMENTS  
Dodson, Zackary; Yee, Ben; Kochunas, Brendan; Downar, Thomas; Kim, Kang Seog
- 13:50-14:10** THE RELATION BETWEEN NUCLEAR REACTOR CORE SIZE AND XENON-INDUCED SPATIAL OSCILLATIONS  
Nir Kastin, Shai Kinast, Assaf Kolin, Ehud Meron
- 14:10-14:30** SIMPLIFIED AMPX LIBRARY CAPABILITY OF THE CASL NEUTRONICS SIMULATOR MPACT  
Kang Seog Kim, Yuxuan Liu, and Cole A. Gentry
- 14:30-14:50** AN APPLICATION DEMONSTRATION OF GEN-TRANSFOAM: A COUPLED CODE BETWEEN GEN-FOAM MULTI-PHYSICS SOLVER AND TRANSURANUS FUEL PERFORMANCE CODE  
Xinyu Zhao, Eugene Shwageraus
- 14:50-15:10** A SIMPLE MULTIPHYSICS COUPLING FOR HIGH-FIDELITY NEUTRONIC MODELLING IN FUEL PERFORMANCE CODES  
Tomatis Daniele, Zmijarevic Igor, Paolo Cattaneo
- 15:10-15:30** SOLUTION STRATEGIES FOR HTR MULTI-MODULE SYSTEM  
Jianan LU, Jiong GUO, and Fu LI

### Track 4 Fuel Cycle and Nuclear Criticality Safety Session 4

Chair

Location: Maya 2

- 13:30-13:50** IMPLEMENTING GADOLINIUM CREDIT FOR BWR UO<sub>2</sub> USED FUEL TRANSPORTATION: ON THE CHOICE OF THE ISOTOPIC MODELING STRATEGY  
M.Tardy, S. Kitsos, D. Lin, J. Alt, L. Milet, P. Puppetti, G. Grassi, F. Holzgrewe, V. Roland, D. Schreyer And Y-S. Marguerat
- 13:50-14:10** USING AUTOREGRESSIVE MOVING AVERAGE METHOD TO DETERMINE THE DEPLOYMENT OF NUCLEAR FUEL CYCLE FACILITIES  
Robert Flanagan and Anthony Scopatz
- 14:10-14:30** UNCERTAINTY QUANTIFICATION OF BWR CRITICALITY SAFETY SIMULATIONS  
Majdi I. Radaideh, Dean Price, and Tomasz Kozlowski
- 14:30-14:50** DEVELOPMENT OF A REACTOR PHYSICS UNCERTAINTY QUANTIFICATION TOOLKIT FOR USE WITH THE WIMS AND MONK CODES  
J G Hosking, G P Dobson, B A Lindley, M Wassell, R J Perry, T C Ware, R M Mason, T C Fry, and F Tantillo
- 14:50-15:10** CORRELATION ANALYSIS IN CONTROL ROD WORTH UNCERTAINTY QUANTIFICATION  
Yizhen Wang, Chen Hao, Yingjie Wu, Lidong Wang, Jiong Guo, Fu Li
- 15:10-15:30** STUDY ON TH-U FUEL CYCLE AND START-UP STRATEGY OF MOLTEN SALT REACTOR  
Qichang Chen, Shengyi Si, Hua Bei, Jinkun Zhao

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## WEDNESDAY, APRIL 25

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### Track 5 Reactor Physics Experiments and Nuclear Data Session 5

Chair

Location: Maya 3

- 13:30-13:50** SUBCRITICAL REACTIVITY DETERMINATION USING ROSSI-ALPHA MEASUREMENTS ON A THERMAL HEU SYSTEM  
George McKenzie, Travis Grove, Rene Sanchez, and William Myers
- 13:50-14:10** EXPERIMENTAL INVESTIGATION ON PROBABILITY DISTRIBUTION OF NEUTRON COUNTS IN A NUCLEAR REACTOR  
Kunihiro Nakajima, Sin-ya Hohara, Atsushi Sakon and Kengo Hashimoto
- 14:10-14:30** IMPROVEMENT OF PROBABILITY TABLE GENERATION USING LADDER METHOD FOR A NEW NUCLEAR DATA PROCESSING SYSTEM FRENDY  
Kenichi Tada
- 14:30-14:50** BURN-UP EFFECT ON NUCLEAR DATA SENSITIVITY AND UNCERTAINTY FOR REACTOR SAFETY APPLICATIONS  
Raphaelle Ichou, Alexandru Prodan
- 14:50-15:10** DEAD-TIME AND SPATIAL CORRECTIONS FOR THE KUCA SUBCRITICAL ASSEMBLY EXPERIMENTS  
A. Talamo; Y. Gohar; M. Yamanaka; C.H. Pyeon
- 15:10-15:30** CONVERGENCE ANALYSIS AND CRITERION FOR DATA ASSIMILATION WITH SENSITIVITIES FROM MONTE CARLO NEUTRON TRANSPORT CODES  
Siefman D, Hursin M, Aufiero M, Bidaud A, and Pautz

### Track 7 Reactor Operation and Safety Session 1

Chair

Location: Maya 4

- 13:30-13:50** OVERVIEW OF THE CORTEX PROJECT  
Christophe Demazière, Paolo Vinai, Mathieu Hursin, Stefanos Kollias and Joachim Herb
- 13:50-14:10** DESIGN OF A HIGH ORDER CAMPBELL MEASUREMENT SYSTEM  
G. de Izarra, Zs. Elter, C. Jammes
- 14:10-14:30** STUDIES ON THE EFFECTS OF LOCAL POWER PEAKING ON HEAT TRANSFER UNDER DRYOUT CONDITIONS IN BWRS  
I.Clifford, M. Pecchia, R. Mukin, H. Ferroukhi and A. Gorzel
- 14:30-14:50** TOWARDS SYSTEMATIC AND CONTINUOUS TRACKING OF NEUTRON AND PROCESS NOISE SIGNATURES DURING LWR OPERATION  
Abdelhamid Dokhane, Dionysios Chionis, Hakim Ferroukhi
- 14:50-15:10** A SENSITIVITY STUDY FOR REACTOR NEUTRON NOISE CALCULATIONS WITH A NEUTRON ABSORBER OF VARIABLE STRENGTH  
Huaiqian Yi, Paolo Vinai, and Christophe Demazière
- 15:10-15:30** SPATIAL RESOLUTION EFFECTS ON THE PREDICTION OF HYDROGEN DISTRIBUTION AND HYDRIDE FORMATION IN ROD BUNDLES  
Ahmed Aly, Victor Petrov, Albert Casagrande, Maria Avramova, Annalisa Manera, Kostadin Ivanov

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## WEDNESDAY, APRIL 25

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### SS 1 Uncertainty Analysis and Reduced Order Modeling Session 3

Chair

Location: Mexico - Cozumel

- 13:30-13:50** DEVELOPMENT OF REDUCED ORDER MODEL OF SEVERE ACCIDENT ANALYSIS CODE FOR PROBABILISTIC SAFETY MARGIN ANALYSIS  
Masaki MATSUSHITA, Tomohiro ENDO, Akio YAMAMOTO, Takumi KITAO
- 13:50-14:10** NUCLEAR DATA SENSITIVITY ANALYSIS FOR REACTIVITY COEFFICIENTS BY MONTE CARLO SECOND-ORDER PERTURBATION TECHNIQUES  
Seungyeol Yoo, Hyung Jin Shim
- 14:10-14:30** NUCLEAR DATA UNCERTAINTY ANALYSIS OF THE TIARA IRON BENCHMARK USING THE RANDOM SAMPLING CODE SANDY ACCELERATED BY THE ADVANTG HYBRID TRANSPORT CODE  
Bor Kos, Ivan Kodeli, Luca Fiorito and Gašper Žerovnik
- 14:30-14:50** DETERMINATION OF SOBOL SENSITIVITY INDICES FOR CORRELATED INPUTS WITH SHARK-X  
Hursin M., Siefman D., Perret G., Rochman D., Vasiliev .A and Ferroukhi H
- 14:50-15:10** SANDY-PYNJOY: A COMPUTATIONAL SCHEME FOR THE CREATION OF RANDOM LIBRARIES FOR THE PERFORMANCE OF DETERMINISTIC AND MONTE CARLO UNCERTAINTY ANALYSIS  
Augusto Hernandez-Solis; Luca Fiorito; Alexey Stankovskyi and Gert Van den Eynde
- 15:10-15:30** COMPARISON OF THE FEYNMAN-Y AND THE ROSSI- $\alpha$  METHODS FOR SUBCRITICAL SYSTEMS  
Mark Nelson, Alex McSpaden, George McKenzie, Jesson Hutchinson, Travis Baugher

### Track 1 Reactor Analysis Methods Session 14

Chair

Location: Maya 1

- 15:50-16:10** IMPLEMENTATION OF WESTINGHOUSE ATF TO EXTEND CYCLE LENGTH OF CURRENT PWR TO 24-MONTH CYCLES  
Fausto Franceschini, Sumit Ray, Bob Oelrich, Ed Lahoda, Jeremy King
- 16:10-16:30** APPLICATION OF APEC METHOD TO A 2-D CANDU CORE ANALYSIS  
Mohammad Abdul Motalab, Woosong Kim, and Yonghee Kim
- 16:30-16:50** NEUTRONIC ASSESSMENT OF ACCIDENT-TOLERANT CLADDING CONCEPTS FOR CIVIL NUCLEAR MARINE PROPULSION CORES. Part I: REACTIVITY & SPECTRAL HARDENING  
Syed Bahauddin Alam, Geoff T. Parks, Bader Almutairi and Cameron S. Goodwin
- 16:50-17:10** NEUTRONIC ASSESSMENT OF ACCIDENT-TOLERANT CLADDING CONCEPTS FOR CIVIL NUCLEAR MARINE PROPULSION CORES. Part II: RIM EFFECT & REACTIVITY FEEDBACK ANALYSIS  
Syed Bahauddin Alam, Geoff T. Parks, Bader Almutairi and Cameron S. Goodwin
- 17:10-17:30** SENSITIVITY OF DIFFERENTIAL EVOLUTION ALGORITHMS FOR MULTI-OBJECTIVE OPTIMIZATION PROBLEMS IN FUEL ASSEMBLY DESIGN  
Alan Charles, Geoff Parks
- 17:30-17:50** ONE-NODE CMFD FORMULATIONS FOR MULTI-GROUP SP3 EQUATIONS IN HEXAGONAL GEOMETRY  
Seongdong Jang and Yonghee Kim

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## WEDNESDAY, APRIL 25

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### SS2 Space Nuclear Systems Session 1

Chair

Location: Maya 2

- 15:50-16:10** NUCLEAR ELECTRIC SPACE PROPULSION WITH LOW ENRICHED URANIUM  
Nathaniel Read and Eugene Shwageraus
- 16:10-16:30** DOES XE-135M CROSS-SECTION UNCERTAINTY MATTER IN NUCLEAR THERMAL PROPULSION REACTORS?  
Vishal Patel, Michael Eades, and Paolo Venneri
- 16:30-16:50** DECAY HEAT CALCULATIONS AND PROPELLANT REQUIREMENTS FOR A LOW-ENRICHED CERMET-BASED NUCLEAR THERMAL PROPULSION ENGINE  
Denig A., Ahmed R., Gates J.T., Mehta V. and Kotlyar D.
- 16:50-17:10** INVESTIGATION OF A LOWER THRUST NUCLEAR THERMAL PROPULSION DESIGN UTILIZING LOW-ENRICHED URANIUM FUEL  
Samantha Rawlins and Yonghee Kim

### Track 5 Reactor Physics Experiments and Nuclear Data Session 6

Chair

Location: Maya 3

- 15:50-16:10** USE OF NEW NUCLEAR DATA LIBRARIES FOR THE MONTE CARLO ANALYSIS OF NEUTRONIC MEASUREMENTS IN THE TAPIRO REACTOR  
C. Di Gesare, D. Caron, S. Dulla, P. Ravetto, M. Carta, V. Fabrizio
- 16:10-16:30** PROCESSING OF A COMPREHENSIVE WINDOWED MULTIPOLE LIBRARY VIA VECTOR FITTING  
Jingang Liang, Xingjie Peng, Shichang Liu, Colin Josey, Benoit Forget and Kord Smith
- 16:30-16:50** BINARY FORMULATION OF DECAY EQUATIONS WITH LIMITING CASES & CRAM COMPARISON  
Anthony Scopatz and Aaron Meurer
- 16:50-17:10** ESTIMATION OF SUBCRITICALITY IN DOLLAR UNITS USING INTEGRAL METHOD FOR SUBCRITICAL SYSTEM  
Asahi NONAKA, Tomohiro ENDO, Akio YAMAMOTO
- 17:10-17:30** EVALUATED NUCLEAR DATA VERIFICATION AND PROCESSING AT NEA  
Luca Fiorito, Franco Michel-Sendis, and Nicolas Soppera
- 17:30-17:50** IMPLEMENTATION OF THE GNDS FORMAT FOR EVALUATED NUCLEAR DATA  
Descalle M.-A., Beck B. R., Mattoon C. M., Jurgenson E. D., McKinley M. S., and Bailey T. S.
- 17:50-16:10** MYRRHA MOCK-UP REACTIVITY EFFECTS IN THE FAST CRITICAL VENUS-F CORES INVESTIGATED WITHIN THE MYRTE PROJECT  
A.Kochetkov, A. Krása, N. Messaoudi, P. Baeten, V. Bécares, A. Billebaud, S. Chabod, T. Chevret, F.-R. Lecolley, J.-L. Lecouey, G. Lehaut, N. Marie, D. Villamarin, G. Vittiglio and J. Wagemans

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## WEDNESDAY, APRIL 25

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### Track 6 Reactor Concepts and Designs Session 2

Chair

Location: Maya 4

- 15:50-16:10** DESIGN EVALUATION OF A MIXED SPECTRUM LONG-LIVED REACTOR CORE  
Abdalla Abou-Jaoude, Nicolas Stauff, Anna Erickson
- 16:10-16:30** THE CONCEPTUAL CORE DESIGN OF A SMALL MODULAR FAST REACTOR COOLED BY LEAD-BISMUTH EUTECTIC  
Tung Dong Cao Nguyen, Jiwon Choe, Bamidele Ebiwonjumi, Matthieu Lemaire and Deokjung Lee
- 16:30-16:50** CONCEPTS AND CHARACTERISTICS OF A SOLUBLE-BORON-FREE SMALL MODULAR REACTOR WITH CENTRALLY-SHIELDED BURNABLE ABSORBERS  
Xuan Ha Nguyen, Anisur Rahman and Yonghee Kim
- 16:50-17:10** MOLTEN SALT COOLANT REACTIVITY FEEDBACK IN ALTERNATIVE FHR DESIGNS  
Zhiyao Xing, Eugene Shwageraus
- 17:10-17:30** EFFECT OF UNCERTAINTIES IN U235 (N,GAMMA) CROSS SECTION ON A LEAD-COOLED REACTOR TRANSIENT  
A. Levinsky, D. Roubtsov, F. P. Adams and A. Trottier
- 17:30-17:50** NEUTRON THERMALIZATION IN FASTER (FAST TEST REACTOR)  
F. Heidet, C. Grandy and R.N. Hill
- 17:50-18:10** CORE SAFETY MEASURES IN ESFR-SMART  
A. Rineiski, C. Meriot, M. Marchetti, and J. Krepel

### Track 8 Transient and Safety Analysis Session 4

Chair

Location: Mexico - Cozumel

- 15:50-16:10** APPLICATION OF THE MARS-LMR/FREK SPATIAL KINETICS COUPLED SYSTEM CODE TO STABILITY ANALYSES OF THE PROTOTYPE SODIUM COOLED FAST REACTOR  
Jaejin Lee, Jong Hyuck Won, Min Jae Lee, Jae-Yong Lim, and Han-Gyu Joo
- 16:10-16:30** APPLICATION OF THE SERPENT--OPENFOAM COUPLED CODE SYSTEM TO THE SEALER REACTOR CORE  
Riku Tuominen, Ville Valtavirta and Jaakko Leppänen
- 16:30-16:50** NECP-X/SUBSC SOLUTIONS TO VERA CORE PHYSICS BENCHMARK PROGRESSION PROBLEMS 6 AND 7  
Jun Chen, Liangzhi Cao, Zhouyu Liu, Chen Zhao, and Hongchun Wu
- 16:50-17:10** REACTOR DYNAMICS MODEL FOR THE MOLTEN SALT REACTOR BASED ON P1 APPROXIMATION  
Muhammad Ramzy Altahhan, Maria Avramova, Kostadin Ivanov
- 17:10-17:30** EFFECTS OF CASMO5 MODELS AND DELAYED NEUTRON DATA ON SIMULATE-3K REACTIVITY INITIATED ACCIDENT PREDICTIONS  
Gerardo Grandi and Rodolfo Ferrer
- 17:30-17:50** SOLUTION OF OECD/NEA SFRS BENCHMARK USING SARAX CODE SYSTEM: TRANSIENT ANALYSIS  
Xianan Du, Liangzhi Cao, Youqi Zheng, Hongchun Wu
- 17:50-18:10** ANALYSIS OF THE EFFECT OF THE FUEL COMPRESSIBILITY ON THE MOLTEN SALT FAST REACTOR DYNAMICS  
E. Cervi, S. Lorenzi, A. Cammi, L. Luzzi

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## THURSDAY, APRIL 26

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 15

Chair

Location: Maya 1

- 8:00-8:20** METHOD FOR OPTIMIZATION OF ENRICHMENT AND BURNABLE ABSORBER DISTRIBUTIONS WITHIN FUEL ASSEMBLIES BASED ON MANUFACTURING CONSTRAINTS  
Brian Andersen, David Kropaczek
- 8:20-8:40** QUALIFICATION OF PARAGON2/ANC CODE SYSTEM FOR PWR CORE DESIGN SIMULATIONS  
Mohamed Ouisloumen, Ho Q. Lam, and Jason B. Klatt
- 8:40-9:00** DEMONSTRATION OF COUPLED FUEL PERFORMANCE CALCULATIONS IN VERA ON WATTS BAR UNIT 1, CYCLE 1  
S. Stimpson, K. Clarno, J. Powers, B. Collins, R. Pawlowski, A. Toth, R. Gardner, S. Novascone, S. Pitts, J. Hales, G. Pastore
- 9:00-9:20** ANALYSIS OF THE BEAVRS BENCHMARK USING THE TRITON/PARCS/PATHS TWO-STEP SEQUENCE  
Daniel O' Grady, Tomasz Kozlowski, and Nathanael Hudson
- 9:20-9:40** COMPARING PRESSURE VESSEL FAST NEUTRON FLUX DISTRIBUTIONS CALCULATED BY THREE-DIMENSIONAL FLUX SYNTHESIS, TORT, RAMA, AND MAVRIC  
Yu-Shiang Huang, Tai-Liang Kuo, and Rong-Jiun Sheu
- 9:40-10:00** PERFORMANCE OF THE EQUIPARTITION TRACKS METHOD FOR 3D MOC ON SHARED-DISTRIBUTED MEMORY  
Guo Jian, Guo Jiong, Wang Lidong, Lu Jianan, Niu Jinlin and Li Fu

### Track 7 Reactor Operation and Safety Session 2

Chair

Location: Maya 2

- 8:00-8:20** IMPROVING SAFETY OF FAST REACTOR WITH CORE REFLECTED BY MATERIAL OF HEAVY ATOMIC WEIGHT AND EXTREMELY LOW NEUTRON ABSORPTION  
Kulikov G.G., Shmelev A.N., Apse V.A. and Kulikov E.G.
- 8:20-8:40** ON THE POSSIBILITY OF AN OPTICAL NEUTRON FLUX DETECTOR  
G. de Izarra, A. Amamra, C. Jammes
- 8:40-9:00** NEUTRON FLUX MONITORING DURING SLOW TRANSIENT CONDITIONS IN A SODIUM-COOLED FAST REACTOR  
Vasudha Verma, Philippe Filliatre, Carl Hellesen, Staffan Jacobsson Svärd, and Christian Jammes
- 9:00-9:20** ONLINE ADVERSARIAL LEARNING OF REACTOR STATE  
Yeni Li, Elisa Bertino, and Hany S. Abdel-Khalik
- 9:20-9:40** URANIUM NITRIDE FUELS FOR APPLICATION IN CANDU REACTORS  
J. Wallenius and M. Hussein

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## THURSDAY, APRIL 26

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### SS1 Uncertainty Analysis and Reduced Order Modeling Session 4

Chair

Location: Maya 3

- 8:00-8:20** UNCERTAINTY QUANTIFICATION OF PEBBLE BED REACTOR FUELS USING SAMPLING METHOD: CONTRIBUTION OF MANUFACTURING PARAMETERS AND CROSS SECTION UNCERTAINTY  
Hanjoo Kim, Wonkyeong Kim, Frederik Reitsma, Gerhard Stydom and Deokjung Lee
- 8:20-8:40** SENSITIVITY AND UNCERTAINTY ANALYSIS OF THE PEBBLE-BED FLUORIDE-SALT-COOLED HIGH-TEMPERATURE REACTOR (PB-FHR)  
Jun Shi, Manuele Aufiero, Massimiliano Fratoni
- 8:40-9:00** TRANSPORT ERROR ESTIMATION VIA NON-RECURSIVE RESIDUAL MONTE CARLO  
Yunhaung Zhang and Jim E. Morel
- 9:00-9:20** AN EXTERNAL ADJOINT SOURCE FOR ARBITRARY RESPONSES IN MONTE CARLO EIGENVALUE CALCULATIONS  
Sung Hoon Choi, Hyung Jin Shim, Chang Hyo Kim
- 9:20-9:40** DEVELOPMENT OF SINGLE PEBBLE BENCHMARK EX. I-2 & I-3 MODEL FOR IAEA UAM CRP WITH MOOSE  
Jinlin Niu, Lidong Wang, Jiong Guo, Fu Li
- 9:40-10:00** SAMPLING-BASED UNCERTAINTY QUANTIFICATION OF THE SIX-GROUP KINETIC PARAMETERS  
Majdi I. Radaideh, William A. Wieselquist, and Tomasz Kozlowski

### Track 5 Reactor Physics Experiments and Nuclear Data Session 7

Chair

Location: Maya 4

- 8:00-8:20** RESONANCE RECONSTRUCTION CAPABILITY IN NJOY21  
Jeremy Lloyd Conlin, Austin P. McCartney, Wim Haeck, and Amelia Jo Trainer
- 8:20-8:40** ON THE IMPORTANCE OF THE NEUTRON SCATTERING ANGULAR DISTRIBUTIONS FOR THE LWR FAST NEUTRON DOSIMETRY  
A. Vasiliev, D. Rochman, M. Pecchia, H. Ferroukhi
- 8:40-9:00** OVERVIEW OF THE INTERNATIONAL REACTOR PHYSICS EXPERIMENTS EVALUATION PROJECT (IRPHEP) GUIDE TO THE EXPRESSION OF UNCERTAINTY  
Adimir dos Santos, J. Blair Briggs, Ian Hill, Zoltán Szatmáry, Anatoli M. Tsiboulia, Luka Snoj, Vladimir Radulović, Žiga Štancar, Patrick Blaise, John D. Bess, Margaret Marshall
- 9:00-9:20** INTERCOMPARISON OF NEUTRON NOISE MEASUREMENT SYSTEMS IN THE CROCUS REACTOR  
Vincent Lamirand, Grégoire De Izarra, Antonín Krása, Grégory Perret, Oskari Pakari, Pavel Frajtag, Mathieu Hursin, Patrick Blaise, Jan Wagemans, Andreas Pautz
- 9:20-9:40** VALIDATION OF THE MC2-3/TWODANT/DIF3D CODE SYSTEM FOR CONTROL ROD WORTH IN BFS-76 PHYSICAL EXPERIMENTS  
Min Jae Lee, Sunghwan Yun, and Jae Yong Lim
- 9:40-10:00** INVESTIGATION OF FREQUENCY SPECTRUM OF LIGHT WATER TO GENERATE THERMAL SCATTERING LAW  
Vaibhav Jaiswal, Luiz Leal

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## THURSDAY, APRIL 26

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### SS5 Fast Reactors Session 1

Chair

Location: Mexico - Cozumel

- 8:00-8:20** A NEW APPROACH FOR ANALYSING THE IMPACT OF NUCLEAR DATA UNCERTAINTIES ON THE ASTRID SODIUM VOID REACTIVITY EFFECT  
DUFAY Paul, RIMPAULT Gérald
- 8:20-8:40** LOOKING FORWARD FOR A MASURCA EXPERIMENTAL PROGRAMME GENESIS IN SUPPORT TO THE ASTRID SFR CORE  
G.Rimpault, P. Dufay, J. Tommasi and F. Mellier
- 8:40-9:00** RECENT PROGRESS AND VALIDATION OF SARAX FOR SODIUM FAST REACTOR  
Youqi Zheng, Xianan Du, Zi'an Zhai, Liang Qiao, Zhitao Xu, HongchunWu
- 9:00-9:20** SCALE COVARIANCE LIBRARIES FOR SODIUM-COOLED FAST REACTOR SYSTEMS  
Friederike Bostelmann, Winfried Zwermann, Andreas Pautz
- 9:20-9:40** NEW SODIUM FAST REACTOR NEUTRONICS BENCHMARK  
A. Ponomarev, A. Bednarova, K. Mikityuk
- 9:40-10:00** VALIDATION OF THE MCNP6 CODE FOR SFR SHIELDING ANALYSIS  
Tran Quoc Tuan, Sanggeol Jeong, Nguyen Hoang Nhat Khang, Hyunsuk Lee, Sooyoung Choi, Peng Zhang, Min Jae Lee, Jae-Yong Lim, Deokjung Lee

### Track 1 Reactor Analysis Methods Session 16

Chair

Location: Maya 1

- 10:20-10:40** WHOLE CORE CRUD-INDUCED POWER SHIFT SIMULATIONS USING VERA  
Benjamin Collins, Jack Galloway, Robert Salko, Kevin Clarno, Aaron Wysocki, Brett Okhuysen, and David Andersson
- 10:40-11:00** VERIFICATION OF THE CROSS SECTION LIBRARY GENERATED USING OPENMC AND MC2-3 FOR PROTEUS  
Changho Lee and Yeon Sang Jung
- 11:00-11:20** NEUTRONICS MODELING AND SIMULATION OF TEMPERATURE-DEPENDENT EXPERIMENTS PERFORMED AT THE WALTHOUSEN REACTOR CRITICAL FACILITY (RCF) USING PROTEUS-SN  
Matthew D. Eklund, Mathieu Dupont, Peter F. Caracappa, Wei Ji
- 11:20-11:40** DEVELOPMENT AND PRELIMINARY VERIFICATION OF A NEW RECTANGULAR NODAL DIFFUSION SOLVER OF ANTS  
Ville Sahlberg, Antti Rintala
- 11:40-12:00** MULTICYCLE CORE STUDY WITH RADIALLY VARIED ENRICHED PWR FUEL  
Klaes-Håkan Bejmer, Christian Malm, John Loberg and Petter Gabriellsson
- 12:00-12:20** MACHINE LEARNING ALGORITHMS FOR NODAL METHOD CROSS-SECTION FUNCTIONALIZATION  
A. J. Pawel, B. S. Collins, G. I. Maldonado

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## THURSDAY, APRIL 26

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### Track 3 Monte Carlo Methods Session 7

Chair

Location: Maya 2

- 10:20-10:40** MULTI-LAYER NEUTRON ANALYSIS OF A FILLED DRY STORAGE CASK  
Noah McFerran, Haitang Wang, and Andreas Enqvist
- 10:40-11:00** THE 3D MODEL FOR RADIOACTIVE GRAPHITE CHARACTERIZATION IN THE IGNALINA NPP RBMK-1500 REACTOR USING MCNP6  
A. Plukis, R. Plukienė, V. Barkauskas, D. Germanas, L. Juodis, E. Lagzdina, V. Remeikis
- 11:00-11:20** ACCELERATING VARIANCE REDUCTION TECHNIQUES BY SCORING THE IMPORTANCE MAP IN DIRECT MONTE CARLO SHIELDING CALCULATIONS  
Michel Nowak, Davide Mancusi, Henri Louvin, Eric Dumonteil, Jamal Atif
- 11:20-11:40** NON IDEAL CONVERGENCE OF THE FISSION MATRIX FUNDAMENTAL EIGENPAIR IN MONTE-CARLO CALCULATIONS  
Stefano Terlizzi, and Dan Kotlyar
- 11:40-12:00** MATHEMATICS DERIVATION OF THE ADJOINT-WEIGHTED TALLY VALUE FOR GEOMETRIC PERTURBATION OF K-EIGENVALUE BASED ON CONTINUOUS-ENERGY MONTE CARLO METHOD  
Hao Li, Ganglin Yu, Shanfang Huang, and Kan Wang

### SS3 Validation of Reactor Kinetics Measurements Session 1

Chair

Location: Maya 3

- 10:20-10:40** MONTE CARLO CALCULATION OF KINETIC PARAMETERS TO DEDUCE PILOT ROD WORTH OF FUBILA MOX CORES  
Yasushi NAUCHI, Patrick BLAISE, and Cédric JOUANNE, Andrea ZOIA
- 10:40-11:00** INVESTIGATION OF SPATIAL EFFECTS ON NEUTRON NOISE MEASUREMENTS IN THE ZERO POWER REACTOR CROCUS  
O. Pakari, V. Lamirand, D. Godat, G. Perret, M. Hursin, P. Frajtag, and A. Pautz
- 11:00-11:20** THE IMPACT OF THE CORRELATION MATRIX OF THE MEASURED EFFECTIVE DELAYED NEUTRON EFFECTIVE PARAMETERS IN THE INFERRED REACTIVITY.  
Adimir dos Santos, and Ricardo Diniz
- 11:20-11:40** CASMO5 ANALYSIS OF SELECT IPEN/MB-01 EXPERIMENTS  
Joshua Hykes, Rodolfo Ferrer, Joel Rhodes

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## THURSDAY, APRIL 26

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 6 Reactor Concepts and Designs Session 3

Chair

Location: Maya 4

- 10:20-10:40** RECENT APPLICATION STUDIES OF TWR CONCEPT  
Xue-Nong Chen, Fabrizio Gabrielli, and Andrei Rineiski
- 10:40-11:00** ZERO-POWER CRITICALITY BENCHMARK EVALUATION OF THE MOLTEN SALT REACTOR EXPERIMENT  
Dan Shen, Massimiliano Fratoni, Manuele Aufiero, Adrien Bidaud, Jeffrey Powers and Germina Ilas
- 11:00-11:20** COMPARISON OF THE MAIN OPERATIONAL CHARACTERISTICS OF THE LEAD-COOLED, GAS-COOLED AND MOLTEN SALT SMALL MODULAR REACTOR CONCEPTS  
A. Levinsky, F. P. Adams, S. Golesorkhi, A. Trottier, D. Roubtsov, and J. Alexander
- 11:20-11:40** A NEUTRONIC STUDY OF TRU MULTI-RECYCLING IN MOX AND FCM FUELED PWR ASSEMBLIES  
Ye Seul Cho
- 11:40-12:00** FEASIBILITY OF A VERY-LOW-BORON CORE DESIGN FOR APR1400 WITH 24-MONTH CYCLE LENGTH  
Manseok Do, Xuan Ha Nguyen, and Yonghee Kim
- 12:00-12:20** ON THE IMPORTANCE OF CONTROL ASSEMBLY LAYOUTS IN STANDING WAVE B&B CORES  
Chris Keckler, Massimiliano Fratoni, Ehud Greenspan

### SS5 Fast Reactors Session 2

Chair

Location: Mexico - Cozumel

- 10:20-10:40** SFR TRANSIENT CALCULATIONS WITH ATHLET-DYN3D ON THE EXAMPLE OF BN-TYPE REACTOR  
Vladimir Ivanov, Nikolay Khrennikov, Jeremy Bousquet and Kiril Velkov
- 10:40-11:00** SENSITIVITY AND UNCERTAINTY STUDIES FOR THE ALFRED LEAD COOLED FAST REACTOR CORE  
Peter German,  Aranyosy, Zolt Brczki, Mt Szieberth
- 11:00-11:20** MCS ANALYSIS OF IAEA LEAD-COOLED FAST REACTOR CORE NEUTRONICS BENCHMARK  
Bamidele Ebiwonjumi, Tung Dong Cao Nguyen, Jiwon Choe, and Deokjung Lee
- 11:20-11:40** BENCHMARKING OF SUPERMC BASED ON LEAD-BISMUTH COOLED FAST REACTOR RBEC-M  
Hui Ding, Bin Wu, Quan Gan, Lijuan Hao, and Jing Song

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## MONDAY, APRIL 23

Sessions in the morning feature a coffee break at 10:00 and for the afternoon at 15:30

### Track 1 Reactor Analysis Methods Session 17

Chair

Location: Maya 1

- 13:30-13:50** A ONE-WAY COUPLED FAST BURST REACTOR BENCHMARK THROUGH LAPLACE TRANSFORM  
B. Ganapol, J. Patel, S. Schunert, R. Gleicher, M. DeHart and R. Martineau
- 13:50-14:10** VERA DEPLETION BENCHMARKS BY CASL VERA, SERPENT AND MCCARD WITH ENDF/B-VII.0  
Kang Seog Kim, Dong Hyuk Lee, Hyung Jin Shim, and Aaron J. Pawel
- 14:10-14:30** VERA MPACT DEPLETION VALIDATION FOR A VARIETY OF PWR FUEL TYPES AND BURNABLE ABSORBERS  
Ali Mohamed, Andrew Godfrey, Mohamed Ouisloumen and Fausto Franceschini
- 14:30-14:50** VERIFYING THE BURNUP SOLVER OF THE APPLICATION PROGRAMMING INTERFACE FOR DEPLETION ANALYSIS (APIDA)  
Daniel Lago and Farzad Rahnema
- 14:50-15:10** A COMPARISON OF MONTE CARLO AND DETERMINISTIC SOLVERS FOR KEFF AND SENSITIVITY CALCULATIONS  
W. Haeck, D. K. Parsons, M. C. White, T. G. Saller and J. A. Favorite

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