DIVISION I: MECHANICS OF MATERIALS

Session D1-S1: Effect of Elevated Temperature on Concrete
Session Chairs: Koichi Matsuzawa, Francois Tarallo
Room: Sharon

Date: 5th Aug 2019  
Time: 3:30 PM - 5:15 PM

USING TIME-TEMPERATURE SUPERPOSITION ON CREEP OF NUCLEAR CONCRETE
Zachary Grasley, Aishwarya Baranikumar, Christa Christa E. Torrence

INFLUENCE OF CEMENT TYPES AND SHRINKAGE REDUCING ADMIXTURE ON FRACTURE PROPERTIES OF CONCRETE EXPOSED TO SUSTAINED ELEVATED TEMPERATURES UP TO 175°C
Koichi Matsuzawa, Hideo Kasami, Takafumi Tayama, Hironobu Nishi, Toshinobu Maenaka, Hiroki Nakanuma, Kenichi Moriya

EFFECTS OF CEMENT, CHEMICAL ADMIXTURE AND SHRINKAGE REDUCING AGENT ON THE STRENGTH CHARACTERISTICS OF CONCRETE SUBJECT TO ELEVATED TEMPERATURE EXPOSURE
Hideo Kasami, Hironobu Nishi, Koichi Matsuzawa, Takafumi Tayama, Michihiko Abe, Toshinobu Maenaka

EXPERIMENTAL STUDY ON RESIDUAL MECHANICAL PROPERTIES OF CONCRETE AFTER HIGH TEMPERATURE EXPOSURE UNDER AXIALLY LOADED CONDITION
Hiroshi Tomofuji, Takeshi Morita, Kohei Watanabe, Sayo Yamada, Akihiko Hayashi

DEVELOPMENT OF A NOVEL DAMAGE MODEL FOR CONCRETE SUBJECT TO HIGH TEMPERATURE AND CONSTRAINT
Jefri Draup, Alexandre Gangnant, Gaetan Colette, Graham Doughty, Jiansong Guo, Thomas Helfer, Giacomo Torelli, Partha Mandal

Session D1-S2: Material Properties, Modelling, and Simulation
Session Chairs: Naoki Miura, Julia Tcherner
Room: Kings

Date: 6th Aug 2019  
Time: 10:15 AM - 12:00 PM

CREEP, RELAXATION AND CYCLIC LOADING INTERACTIONS IN TYPE 316H STAINLESS STEEL UNDER AGR NUCLEAR PLANT CONDITIONS
Alan Cocks, Markian Petkov, Marc Chevalier, David Dean

COUPLED PROTIUM AND DEUTERIUM DIFFUSION MODEL FOR PREDICTION OF HYDROGEN ISOTOPE DISTRIBUTIONS IN ZR-NB PRESSURE TUBES
Eric Nadeau, Donald Metzger

EVALUATION OF BOND CONDITION FOR POST-INSTALLED ADHESIVE ANCHOR BY NEUTRON BEAM TECHNIQUES
Koichi Matsuzawa, Hiroshi Suzuki, Tomohisa Mukai, Takehiko Tanuma, Manabu Kanematsu, Kazuki Ueno

CHARACTERIZATION OF VIRGIN ZXF-5Q AND AXF-5Q POCO GRAPHITE
Dina ElGewaily, Jacob Eapen

MICROSCOPIC AND SPECTROSCOPIC ANALYSIS OF FRETTING WEAR OF ALLOY 617 AT ELEVATED TEMPERATURES
Ahmed Darwish, Arman Ahmadi, Farshid Sadeghi, K. Linga Murty, Jacob Eapen
Session D1-S3: Properties and Modelling of Nuclear Concrete

Session Chairs: Jacob Eapen, Samuel Johnson

Room: Independence

Date: 7th Aug 2019  Time: 10:15 AM - 12:00 PM

REVISED CONSTITUTIVE CRITERIA FOR CONCRETE IN APPLICATIONS OF THE DISCRETE ELEMENT METHOD (DEM)
Jorge Riera, Leticia Miguel, Ignacio Iturrioz

EFFECTIVENESS OF USING OF LIMESTONE AS CEMENT REPLACEMENT IN NUCLEAR RELATED CONCRETE STRUCTURES COMPARED TO TRADITIONAL SUPPLEMENTARY CEMENTING MATERIALS
Daman Panesar, Runxiao Zhang

NUMERICAL ANALYSIS OF ONE-DIRECTIONAL MOISTURE FLOW IN CONCRETE SPECIMENS
Julia Dury, Julia Tcherner, Ohsung Kwon, Evan Bentz

DISCUSSION OF THE INFLUENCE OF CEMENT TYPE AND SHRINKAGE REDUCING AGENT ON WATER CONTENT AND COMpressive STRENGTH DISTRIBUTION OF AGED SHIELDING WALL
Kaoru Inaba, Hironobu Nishi, Hideki Kasami, Koichi Matsuzawa, Hong Zhu Quan, TakaFumi Tayama, Toshinobu Maenaka, Hiroki Nakanuma

Session D1-S4: Properties of Concrete

Session Chairs: Michael Borgerhof, Giorgio Proestos

Room: Queens

Date: 8th Aug 2019  Time: 10:15 AM - 12:00 PM

HOMOGENIZATION OF CONCRETE MICROSTRUCTURES IN NUCLEAR POWER PLANTS
Zachary Grasley, Christa Christa E. Torrence, Aishwarya Baranikumar, Edward Garboczi

STRESS-STATE AND TIME-DEPENDENT DEFORMATION CHARACTERISTICS FOR CEMENTITIOUS MATERIALS
Subodh Mhamankar, Christopher Jones

RESEARCH AND STANDARDIZATION OF HIGH-QUALITY RECYCLED AGGREGATES FOR CONCRETE IN NUCLEAR POWER PLANTS
Hideo Kasami, Yoshhiro Masuda, Toshiyuki Ikeuchi, Hisashi Tateyashiki, Hisanobu Akatsuka, TakaFumi Noguchi, Masaki Tamura, Kunio Yanagibashi

EFFECTS OF ALKALI-SILICA REACTION ON MECHANICAL PROPERTIES AND STRUCTURAL CAPACITIES OF REINFORCED CONCRETE STRUCTURES
Long Phan, Fahim Sadek, Travis Thonstad, H.S. Lew, Sorin Marcu, Jacob Philip
Session D1-S5: Steels and Alloys
Session Chairs: David Rudland, Jacob Eapen
Room: College

Date: 7th Aug 2019 Time: 3:30 PM - 5:15 PM

CRACKING BEHAVIOR OF THERMALLY AGED AUSTENITIC STAINLESS STEEL WELD
Yiren Chen, C Xu, Y Yang, WY Chen, B Alexandreanu, K Natesan, A Rao

DIFFUSION COEFFICIENT MODELLING IN ZR 2.5%NB
Eric Nadeau, Donald Metzger

A TECHNICAL GAP ASSESSMENT OF MATERIALS ISSUES IN MOLTEN SALT REACTORS
Stephen Raiman, Dino Salejmanovic, Stephen Raiman, Lauren Garrison, Hong Wang, Lianshan Li, Chinthaka Silva, Jeremy Busby

POTENTIALS AND ISSUES OF ADDITIVE MANUFACTURED COMPONENTS FOR NUCLEAR POWER PLANTS
Ralf Trieglaff, Axel Schulz, Torsten Fischer, Martin Beckert, Bernd Kuhn

REHEAT CRACKING INITIATION PREDICTION IN AUSTENITIC STEEL USING FINITE ELEMENT ANALYSIS AND VALIDATIONS
Weijing Berre, Mark Schmitz

Special Session D1-SS1: Concrete Degradation
Session Chair: Nebojsa Orbovic
Room: Grand Ballroom B

Date: 6th Aug 2019 Time: 3:30 PM - 5:15 PM

SPECIAL SESSION: UNDERSTANDING, CHARACTERIZING AND MODELING OF CONCRETE AGING IN NUCLEAR ENVIRONMENT
Yann Le Pape

SPECIAL SESSION: MANAGING STRUCTURAL DEFORMATIONS RESULTING FROM ASR
Samuel Johnson

SPECIAL SESSION: STRUCTURAL PERFORMANCE OF NPP CONCRETE STRUCTURES AFFECTED BY ASR
Jacob Philip

SPECIAL SESSION: THE NEED FOR LARGE-SCALE STRUCTURAL TESTS AND SIMPLIFIED MODELING TOOLS FOR CONCRETE CONTAINMENT STRUCTURES
Giorgio Proestos

SPECIAL SESSION: LARGE SCALE EXPERIMENTS IN SUPPORT TO CONCRETE PATHOLOGIES ASSESSMENT
Christophe Marquie
DIVISION II: FRACTURE MECHANICS AND STRUCTURAL INTEGRITY

Session D2-S1: Leak Before Break 1
Session Chairs: Naoki Miura, Robert Kurth
Room: Trade

Date: 5th Aug 2019
Time: 3:30 PM - 5:15 PM

EXPERIMENTAL SUPPORT TO EUROPEAN ATLAS+ PROJECT
Dominique Moinereau, Patrick Delliou, Anna Dahl, Tomas Nicak

THE HUGE MISSING FACTOR IN LBB ANALYSIS – HOW A CIRCUMFERENTIAL THROUGH-WALL-CRACK IN A PIPE SYSTEM CHANGES THE FLEXIBILITY AND REDUCES THE APPLIED MOMENTS
Gery Wilkowski, Frederick Brust, Mohammed Uddin, Sureshkumar Kalyanam

DUCTILE TEARING OR PLASTIC COLLAPSE?
Philippe Gilles, Edith Marques-Viera, Ancelet Olivier, Patrick Delliou, Thierry Grasse

DEVELOPMENT OF COMPUTATIONAL MACROS FOR COMPLETE FAST FRACTURE ANALYSES
HsuKuang Ching, Laurent Thiery, Jason Burr, Mathieu Moreaux

Session D2-S2: Leak Before Break 2
Session Chairs: Philippe Gilles, Mohammed Uddin
Room: Independence

Date: 6th Aug 2019
Time: 10:15 AM - 12:00 PM

ONGOING WORK AND IMPROVEMENT OF LEAK BEFORE BREAK METHODOLOGY FOR SODIUM FAST REACTORS
Hubert Deschanels, Moise Pignol, Philippe Gilles, Remi Lacroix, Sandrine Dischert

EUROPEAN PROJECT ATLAS+: SMALL AND LARGE SCALE DUCTILE TEARING EXPERIMENTS ON FERRITIC STEEL WB36 TO STUDY TRANSFERABILITY OF MATERIAL DUCTILE PROPERTIES
Dominique Moinereau, Patrick Delliou, Anna Dahl, Willy Vincent

COMPUTATIONAL ASSESSMENT OF ASYMPTOTIC CRACK SIZE OF A PROTOTYPE SIZED PIPE BEND: COMPARISON WITH A16 MASTER CURVE
Sureshkumar R, Bn Rao, K Velusamy, Jalaldeen

BENCHMARKING PROBABILISTIC ANALYSIS LBB CODES AGAINST DETERMINISTIC LBB ANALYSIS
Robert Kurth, Cedric Sallaberry, Elizabeth Twombly
Session D2-S3: J and Toughness Evaluation Schemes for Fracture Mechanics Assessment

Session Chairs: Alan Cocks, Dominique Moinereau

Room: Queens

Date: 6th Aug 2019  Time: 1:15 PM - 3:00 PM

J PREDICTIONS FOR DEFECTIVE PIPE ELBOWS VIA THE REFERENCE STRESS METHOD
Yuebao Lei

PROSPECTIVE F.E. MODELING FOR THE DEVELOPMENT OF A J ANALYTICAL SCHEME FOR HORIZONTAL PIPING SUBMITTED TO THERMAL STRATIFICATION
Stephane Chapuliot, Stephane Marie

OPTIMIZED J EVALUATION SCHEME FOR THE FRACTURE MECHANICS ASSESSMENT OF COMPLEX PIPING SYSTEMS SUBJECTED TO VARIOUS LOADING SETS
Stephane Chapuliot, Stephane Marie

AN IMPROVED REGRESSION ANALYSIS FOR PREDICTION FOR TOUGHNESS OF FULLY AGED CAST STAINLESS STEELS
Cedric Sallaberry, Gery Wilkowski, Mohammed Uddin

FRACTURE STUDIES ON SMALL DIAMETER AUSTENITIC STAINLESS STEEL PIPE AND PIPE WELDS WITH CIRCUMFERENTIAL THROUGH WALL CRACK

Session D2-S4: Generic Fracture Issues 1

Session Chairs: Philippe Gilles, Stephane Chapuliot

Room: Independence

Date: 7th Aug 2019  Time: 1:15 PM - 3:00 PM

APPLICATIONS OF PROBABILISTIC FRACTURE MECHANICS FOR PRESSURE TUBES
Bogdan Wasiluk, Blair Carroll, Konstantinos Tsembelis, John Jim

LARGE SCALE MODELLING OF DAMAGE AND FAILURE OF NUCLEAR GRAPHITE MODERATED REACTOR
Ahmadreza Farrokhnia, Andrey Jivkov

PRESSURIZED THERMAL SHOCK PROBABILISTIC SENSITIVITY ANALYSIS
Lorenzo Stefanini, H Uitslag-Doolard, A Shams, F Blom

INFLUENCE OF BOTTOMED OUT SPRING HANGER SUPPORT ON STEAM
Khalid Chaudhry

CHANGE IN FRACTURE TOUGHNESS OF OFE COPPER DUE TO ELECTRON IRRADIATION
Shyam Ghodke, Bijan Dutta
Session D2-S5: Generic Fracture Issues 2
Session Chairs: Robert Kurth, Nadim Moussallam
Room: Queens

Date: 8th Aug 2019 Time: 1:15 PM - 3:00 PM

PREDICTING THE IMPACT OF CRDM THERMAL SLEEVE WEAR IN WESTINGHOUSE PRESSURIZED WATER REACTORS
David Rudland, Stephen Cumblidge, Jerrod Demers, Reed Anzalone

FATIGUE DAMAGE MANAGEMENT ACCORDING TO PERFORMANCE BASED MAINTENANCE (PBM) CONCEPT
Masayuki Kamaya

SENSITIVITY ANALYSIS METHODOLOGY FOR PROBABILISTIC FRACTURE MECHANICS OUTPUT
Deepak Somasundaram, Dojun Shim, Dilip Dedhia, Craig Harrington

USE OF ALUMINUM FOAM ENERGY DISSIPATING SYSTEM IN ITER RC STRUCTURES
Javier Ezeberry, Didier Combescure, Adrian Cabrero

SWELLING OF THE WWER-1000 REACTOR CORE BAFFLE
Yaroslav Dubyk, Vladislav Filonov, Yuliia Filonova

Session D2-S6: Stress Intensity Factor and Fatigue Crack Growth Characterization
Session Chairs: Jose Pires, Nadim Moussallam
Room: College

Date: 8th Aug 2019 Time: 10:15 AM - 12:00 PM

NON-UNIFORM FATIGUE CRACK PROPAGATION TEST CROSSING INTERFACE IN CLADDED PLATE
Masaki Nagai, Naoki Miura, Toshio Nagashima

MODELING OF NATURAL CRACK GROWTH WITH XFEM
Xinjian Duan, Yihai Shi, Min Wang

WEIGHT FUNCTION BASED STRESS INTENSITY FACTOR SOLUTION FOR NOZZLE CORNER CRACKS
Dojun Shim, Dilip Dedhia, Deepak Somasundaram

STRESS INTENSITY FACTOR FOR DEFECTS IN THE STEAM GENERATOR TUBE SHEETS
Stephane Chapuliot, Soumaya Bradai

DETERMINATION OF SIGNIFICANT TEMPERATURE FLUCTUATION LIMIT CONSIDERING RATE OF TEMPERATURE CHANGE
Gaston Bourguigne
Session D2-S7: Fracture Testing
Session Chairs: Julia Tcherner, Stephane Chapuliot
Room: Harris

Date: 7th Aug 2019 Time: 10:15 AM - 12:00 PM

Role of Constraint in Specimen Geometries When Evaluating Fracture Toughness/Material Fracture Resistance for a Surface-Flawed Elbow
Sureshkumar Kalyanam, Gery Wilkowski, Yunior Hioe, Frederick Brust, Edward Punch

Using Local Approaches to Fracture to Quantify the Local Conditions During the Ductile-To-Brittle Transition in Ferritic Steels
Maria Yankova, Andrey Jivkov, Andrew Sherry, Rajesh Patel

Fracture Toughness Changes with Surface Crack Depth – The “Back-Surface Constraint” Effect
Gery Wilkowski, Sureshkumar Kalyanam, Frederick Brust, Mohammed Uddin, D Mukhopadhyay

Analysis of P-SPT Specimens Using Damage Mechanics Model to Predict J-Initiation and Its Experimental Verification
Taslim Shikalgar, Jayanta Chattopadhyay, Bijan Dutta

Identification of Rupture Parameters for Irradiated Nuclear Fuel
Jean Gatt, Ronan Henry, Isabelle Zacharie-Aubrun, Cyril Langlois, Sylvain Meille

Session D2-S8: Assessment of Dynamic Loadings
Session Chairs: Andrey Jivkov, Bijan Datta
Room: Queens

Date: 7th Aug 2019 Time: 3:30 PM - 5:15 PM

Experimental Study of the Seismic Behavior of Corroded RC Beams
Chaymaa Lejouad, Benjamin Richard, Philippe Mongabure, Sophie Capdevielle, Frederic Ragueneau

Seismic Analysis of the Nuclear Reactor Vessel Considering Hydraulic Loads During Operating Condition
Eunho Lee, Sangjeung Lee, Nocheol Park, Youngin Choi, Jongbeom Park

Fluid Structure Interaction Method in Assessment of Dynamic Response of VVER 440 Reactor Internals to Pressure Shock Induced by Large LOCA Accident
Petr Gal, Miroslav Srvec, Vladislav Pistora

A Method for Monitoring Vibrational Fatigue of Structures and Components
Nadim Moussallam, Rainer Ziegler, Juergen Rudolph, Steffen Bergholz

Dynamical Assessment of VVER Reactor Internals for Large Break LOCA
Vladislav Pistora, Petr Gal, Miroslav Srvec
DIVISION III: COMPUTATION, SIMULATION, AND VISUALIZATION

Session D3-S1: Fluid-Structure Interaction 1
Session Chairs: Masataka Sawada, Bu-Seog Ju
Room: Independence

Date: 5th Aug 2019    Time: 3:30 PM - 5:15 PM

VALIDATION AND DETERMINATION OF SIGNIFICANT SIMULATION PARAMETERS USING THE SPH CODE NEUTRINO
Emerald Ryan, Philippe Bardet, Ramprasad Sampath, Niels Montanari, Steven Prescott, Matthieu Andre

VERIFICATION OF NUMERICAL MODELS FOR SEISMIC FLUID-STRUCTURE INTERACTION ANALYSIS OF LIQUID METAL NUCLEAR REACTORS
Chingching Yu, FaizanUlHaq Mir, Michael Cohen, Justin Coleman, Philippe Bardet, Andrew Whittaker

DATASET GENERATION FOR VALIDATION OF FLUID-STRUCTURE INTERACTION MODELS
FaizanUlHaq Mir, Andrew Whittaker, Chingching Yu, Michael Cohen, Justin Coleman, Philippe Bardet

INFLUENCE OF SOIL STIFFNESS ON SLOSHING EFFECT IN THE ABWR POOLS
Yoshihiro Goto, Shohei Onitsuka, Tadashi Iijima

SEISMIC EXPERIMENTAL STUDY OF HUGE COMPLEX STORAGE TANK IN NUCLEAR ISLAND BASED ON FLUID-STRUCTURE INTERACTION
Ting Xu, Meng Chu, Honghui Ge

Session D3-S2: Fluid-Structure Interaction 2
Session Chairs: Bu-Seog Ju, Ramprasad Sampath
Room: Queens

Date: 7th Aug 2019    Time: 10:15 AM - 12:00 PM

IMPROVED DESIGN OF A T-JUNCTION BASED ON CFD ANALYSES
Frank Bloemeling

ANALYSIS ON THERMAL STRIPING AND THERMAL SHOCK OF THE LOWER HEAD OF CENTRAL MEASURING SHROUD IN A FAST REACTOR
Shu Zheng, Qiong Cao, Daogang Lu

FLUID-STRUCTURE-INTERACTION ANALYSIS FOR A WATER HAMMER LOADED PIPING ELBOW
Ahti Oinonen

COMPARISON OF CALCULATED AND MEASURED STRAINS IN THE MICROSTRUCTURE OF STEEL 316L
Markus Niffenegger, V Herrera-Solaz
Session D3-S3: Fluid-Structure Interaction 3
Session Chairs: Jan Lundwall, Mike Cohen  Room: Independence

Date: 6th Aug 2019  Time: 1:15 PM - 3:00 PM

COUPLED FLUID-STRUCTURE SIMULATION OF AIR-STEAM LEAKAGE IN SMALL-SCALE CONCRETE SPECIMENS
Ludwig Bahr, Juergen Sievers, Nico Herrmann, Moritz Zemann

CALCULATIONS OF POTENTIAL LOSS OF WATER IN WATER BASIN DUE TO NEW EARTHQUAKE DATA
Pauline Billion, Maxime Fournier, Cyrille Desrayaud, Nicolas Besson

SIMULATING THE THERMOMECHANICAL EVOLUTION OF SFR FUEL SUBASSEMBLIES WITH A COUPLED APPROACH
Francisco Acosta, Victor Blanc, Thierry Cadiou, Pablo Rubiolo

CALCULATION OF THE NATURAL FREQUENCIES OF A FLUID-FILLED PIPE SYSTEM WITH THE COUPLED CODES
DYVRO/ROHR2: COMPARISON WITH AN ANALYTICAL SOLUTION AND VALIDATION
Thorsten Neuhaus

Session D3-S4: Aircraft Crash and Impact
Session Chairs: Yuhei Nitta, Genadijs Sagals  Room: Trade

Date: 8th Aug 2019  Time: 3:30 PM - 5:15 PM

COMPARATIVE STUDY FOR REDUCTION OF APC INDUCED VIBRATION
Viktor Vlaski, Joerg Moersch, Martin Sallmann

STRUCTURAL ASSESSMENT FOR SAFETY-RELATED EQUIPMENT UNDER AIRCRAFT IMPACT
Bongrae Kim, Daejoon Kim, Ilhwan Moon, Randy James

IMPACT ASSESSMENT ON LOCAL DAMAGE TO REINFORCED CONCRETE PANELS BY DIFFERENT PROJECTILES - IMPACT BEHAVIOR FOR PROJECTILES WITH HEMISPHERICAL NOSE SHAPE -
Zuoyi Kang, Minoru Nagai, Akemi Nishida, Haruji Tsubota, Yinsheng Li

THE ANTI-IMPACT CAPACITY ANALYSIS OF THE CFRP AND COMPOSITE ARMORS
Shuaixi Li, Shujian Cheng, Meng Chu, Fang Yuan

Session D3-S5: Material Damage and Large Deformations 1
Session Chairs: Jefri Draup, Daman Panesar  Room: Sharon

Date: 6th Aug 2019  Time: 1:15 PM - 3:00 PM

PREDICTIVE MATURITY OF NON-LINEAR CONCRETE CONSTITUTIVE MODELS FOR IMPACT SIMULATION
Christopher Jones, Joshua Hogancamp

FINITE ELEMENT ANALYSIS METHODOLOGY REFLECTING NEUTRON IRRADIATION EFFECTS FOR STRUCTURAL ANALYSIS
Sangjeung Lee, Eunho Lee, Nocheol Park, Jongsung Kim, Youngin Choi, Jongbeom Park

SURFACE EARTHQUAKE FAULT SIMULATION USING HIGH PERFORMANCE COMPUTING FOR CONSIDERATION OF UNCERTAINTY
Kazumoto Haba, Masataka Sawada, Muneo Hori

REDUCTION OF A MECHANICAL MODEL DEDICATED TO THE STUDY OF ASSEMBLY BOW
Bertrand Leturcq, Serge Pascal, Patrick Tallec, Julien Pacull

SELF-HEALING AND PROGRESS TOWARDS SELF-SENSING VIA OPTICAL WAVEGUIDES IN MICROVASCULAR COMPOSITES
William Martin, Sherif Aboubakr, Jason Patrick
**Session D3-S6: Material Damage and Large Deformations 2**

**Session Chairs:** Pierre-Alain Naze, Joshua Hogancamp  
**Room:** Harris

**Date:** 6th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

*Simulations of Surface Earthquake Fault of 2014 Nagano-Ken-Hokubu Earthquake Using High Performance Computing*
Masataka Sawada, Kazumoto Haba, Muneo Hori

*Proposed Damping Modification Curves for the Static Nonlinear Procedure*
Thuonganh Nguyen, Pierre Labbe, Guillaume Hervé-Secourgeon, Jean-Francois Semblat

*Safety Assessment of Appurtenances of Containment Structure for Design Extension Condition*
Sourav Acharya, Lalaram Bishnoi, Santosh Masketty, A Pisharady, Roshan A.D, Abhijit Harshan

*Numerical Missile Impact Simulation of Punching Test Specimens Containing Longitudinal Reinforcing and T-Headed Bars*
Amir Ghaemmaghami, Yuxin Liu, Homayoun Abrandhi, Xue Han

*Self-Healing of Delamination Damage in Polymer-Matrix Fiber-Composites Via Thermal Remending*
Alexander Snyder, Jason Patrick

**Session D3-S7: Soil-Structure Interaction 1**

**Session Chairs:** Manas Chakraborty, Greg Mertz  
**Room:** Queens

**Date:** 7th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

*Soil-Pile-Structure Interaction Analysis: Implementation of Flexible Alternative Theoretical Approach in Sassi Framework*
Julio Garcia, Tobias Richter, Peter Rangelow, Huy Tran, Ben Kosbab

*Effect of Non-Vertically Propagating Earthquake Waves and Nonlinear Soil-Structure Interaction on Nuclear Facility Response*
Swetha Veeraraghavan, Justin Coleman

*Soil Structure Interaction Analyses for Modeling Nonlinear Response of Direct-Shear Type Tests*
Dhrubajyoti Dutta, Amit Varma

*Benchmark Study on Impedance Functions of Large Pile Foundations*
Tobias Richter, Vladimir Nincic, Peter Rangelow, Ben Kosbab, Julio Garcia, Hans-Georg Hartmann, Joergen Johansson

**Session D3-S8: Soil-Structure Interaction 2**

**Session Chairs:** Sunwoo Park, Dave McCallen  
**Room:** Tryon

**Date:** 5th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

*Preliminary Investigations on the Response of Nuclear Power Plants to Aircraft Impact Considering Soil-Structure Interaction*
Arthur Feldbusch, Hamid Sadegh-Azar

*Stochastic ESSI Analysis*
Boris Jeremic, Fangbo Wang, Hexiang Wang, Han Yang, Yuan Feng

*Seismic Response Analysis of Nuclear Island Building Considering Pile-Soil-Structure Interaction*
Xiaoying Sun, Chaoqi Zhang, Jianhua Yang

*An Enhanced Equivalent Linear Soil-Structure Interaction Analysis Approach for Seismic Applications*
Iman Talebinejad, Ben Kosbab, Payman Tehrani, Michel Prez
STUDY OF NONLINEAR SSI ANALYSIS OF CONCRETE SHEAR WALL BUILDINGS USING TIME DOMAIN AND FREQUENCY DOMAIN APPROACHES
Manoj Madurapperuma, Tomoaki Kawanabe, Kazukuni Niwa, Tomohiro Horiguchi

Session D3-S9: Soil-Structure Interaction 3
Session Chairs: Robert Roche-Rivera, Michael Cohen Room: Tryon
Date: 8th Aug 2019 Time: 8:00 AM - 9:45 AM
COUPLED DYNAMIC ANALYSIS OF NSSS AND REACTOR BUILDING INCLUDING SSI FOR DESIGN-EXCEEDING SEISMIC GROUND MOTION
Manuel Pellissetti, Eugen Fütteler, Roland Hilpert, Vladimir Nincic, Sunay Stauble-Akcay, Andrii Nykyforchyn
APPLICATION OF SEISMIC GROUND MOTION INCOHERENCY EFFECTS IN SASSI ON SOIL SITES WITH MULTIPLE FOUNDATIONS
Huy Tran, Ben Kosbab, Kaniel Tilow, Harsh Nandan
STRESS TEST SEISMIC MOTIONS FOR NUCLEAR INSTALLATIONS
Boris Jeremic, Fangbo Wang, Hexiang Wang, Yuan Feng, Han Yang
3D FINITE ELEMENT MODELING APPROACH FOR SEISMIC ANALYSES WITH CONSIDERATIONS OF SMALL MODULAR NUCLEAR REACTORS
Mohsen Azad, Giulio Leon Flores, Josh Parker, Nicholas Brown

Session D3-S10: Soil-Structure Interaction 4
Session Chairs: Viktor Viaski, Boris Jeremic Room: Tryon
Date: 7th Aug 2019 Time: 8:00 AM - 9:45 AM
IMPROVEMENTS IN FREQUENCY DOMAIN SOIL-STRUCTURE-FLUID INTERACTION ANALYSIS OF NUCLEAR POWER PLANTS
Greg Mertz, Giulio Leon Flores, Matthew Snyder, Derrick Watkins, Isabel Cuesta, Mohsen Azad
ON SOME PARAMETERS IMPACTING SEISMIC SOIL-STRUCTURE INTERACTION OF NUCLEAR POWER PLANT STRUCTURES
Sunwoo Park, Sujit Samaddar, Manas Chakravorty, George Wang
EFFECT OF NEAR-SURFACE WAVE PROPAGATION ON SEISMIC RESPONSE OF DEEPLY EMBEDDED STRUCTURE
Mahmoud Madany, Ayman Saudy, Peijun Guo
A HYBRID SSI ANALYSIS METHOD FOR EMBEDDED AND PARTIALLY BONDED RIGID FOUNDATIONS
James Johnson, Juan Jimenez-Chong, Mohamed Talaat, David Nakaki, Cameron Samuelson-Sanford, Oleg Maslenikov

Session D3-S11: Soil-Structure Interaction 5
Session Chairs: Mohsen Azad, Derrick Watkins Room: Independence
Date: 8th Aug 2019 Time: 3:30 PM - 5:15 PM
CHECK POINTS FOR VERIFICATION OF SSI ANALYSIS IN COMBINED ASYMPTOTIC METHOD
Alexander Tyapin
CONSIDERATION OF NON-UNIFORM EMBEDMENT ON THE RESPONSE OF NUCLEAR POWER PLANT
Asa Bassam, Huy Tran, Ben Kosbab
USE OF THE HYBRID LAPLACE-TIME FEM-BEM COUPLING METHOD IN NONLINEAR SSI STUDIES
Charisis Chatzigogos, Theodora Makrypidi, Pierre-Alain Nazé, Charisis Chatzigogos, Nicolas Greffet, Alex Nieto-Ferro
EXTENDING SASSI METHODOLOGY TO SEISMIC SOIL-STRUCTURE INTERACTION (SSI) ANALYSIS OF NUCLEAR BUILDINGS FOUNDED ON SOIL DEPOSITS WITH INCLINED LAYERS
Dan Ghiocel
Session D3-S12: Soil-Structure Interaction 6
Session Chairs: Robert Roche-Rivera, Ovidiu Coman  Room: Tryon

Date: 6th Aug 2019  Time: 8:00 AM - 9:45 AM

A FEASIBILITY STUDY ON DOMAIN REDUCTION METHOD FOR NON-LINEAR SEISMIC RESPONSE ANALYSIS OF SOIL-STRUCTURE INTERACTION SYSTEM
Yuhei Nitta, Kohei Hayashi, Masashi Matsumoto, Masahito Akimoto, Takanori Ogata

SEISMIC SOIL-STRUCTURE INTERACTION BEHAVIOR OF NUCLEAR REACTOR BUILDING
Ramanand Dubey, Shashank Kulidip, Navjeev Saxena

SEISMIC ENERGY FLOW CALCULATION FOR EARTHQUAKE SOIL STRUCTURE INTERACTION SYSTEM
Boris Jeremic, Yuan Feng, Han Yang, Hexiang Wang, Fangbo Wang

SENSITIVITY STUDIES FOR DEEPLY EMBEDDED NUCLEAR ISLAND SSI MODELS WITH PILE FOUNDATIONS INCLUDING THE EFFECTS OF SEISMIC MOTION SPATIAL VARIATION AND NONLINEAR SOIL BEHAVIOR
Dan Ghiocel

Session D3-S13: Soil-Structure Interaction 7
Session Chairs: Annie Kammerer, Lisa Anderson  Room: Tryon

Date: 7th Aug 2019  Time: 3:30 PM - 5:15 PM

NONLINEAR SOIL-STRUCTURE INTERACTION ANALYSIS USING CO-SIMULATION
Robert Spears, Justin Coleman

SEISMIC SSI ANALYSIS COMPARISON BETWEEN DETAILED AND DISCRETIZED MODELING OF AN AUXILIARY CONTROL BUILDING
Samer Elbahey, Stephane Damolini, Konstantinos Oikonomou

SEISMIC RISK ANALYSIS FRAMEWORK FOR NUCLEAR INSTALLATIONS
Boris Jeremic, Hexiang Wang, Fangbo Wang, Han Yang, Yuan Feng, Jeff Bayless, Norman Abrahamson

STRUCTURE-SOIL-STRUCTURE INTERACTION EFFECTS: A CASE STUDY COMPARING TWO APPROACHES
Julio Garcia, Sunay Stauble-Akcay, Andrii Nykyforchyn, Ben Kosbab, Jens-Uwe Klugel
Session D3-S14: Impact
Session Chairs: Manas Chakraborty, Hamid Sadegh-Azar  Room: Sharon

Date: 7th Aug 2019  Time: 3:30 PM - 5:15 PM

EFFECT OF BENDING REINFORCEMENT RATIO ON COMBINED BENDING AND PUNCHING RESPONSE OF REINFORCED CONCRETE SLABS UNDER IMPACT
Sara Ghadimi Khasraghy, Christian Schneeberger, Peter Zwicky, Amin Karbassi

A PRACTICAL EVALUATION METHOD FOR THE IMPACT RESPONSES OF A PROJECTILE AGAINST SURFACE SOIL
Masashi Matsumoto, Yuhei Nitta, Masahito Akimoto, Yoshihiko Toda, Kazuki Sato, Katsuhiro Tanaka, Tetsuya Okutani, Tsutomu Ogawa

REINFORCED CONCRETE SLAB UNDER SOFT IMPACT AT MEDIUM SPEED: LESSONS LEARNED FROM VTT IMPACT PROGRAM
Francois Tarallo, Mathieu Rambach, Mariehelene Bonhomme, Yannick Chauveau

STUDYING THE EFFICIENCY OF ANTI-EXPLOSION PROTECTIVE STRUCTURES USING ADVANCED NUMERICAL SIMULATION
Charisis Chatzigogos, Charisis Chatzigogos, Pierre-Alain Nazé, Yannick Chauveau

ANALYSIS OF REINFORCED CONCRETE WALLS FOR IMPACT OF LARGE DRIFTWOODS DURING TSUNAMIS
Manoj Madurapperuma, Tomoaki Kawanabe, Kazukuni Niwa, Tomohiro Horiguchi

Session D3-S15: Verification and Validation
Session Chairs: Fred Grant, Ben Kosbab  Room: Tryon

Date: 6th Aug 2019  Time: 3:30 PM - 5:15 PM

QUALITY MANAGEMENT, VERIFICATION, AND VALIDATION OF STRUCTURE MECHANICAL COMPUTER CODES AT GRS
Christoph Blaesius, Klaus Heckmann, Juergen Sievers

IMPLEMENTATION, BENCHMARKING, VERIFICATION AND VALIDATION OF NUMERICAL MODELS OF SEISMIC PROTECTIVE DEVICES IN MASTODON
Sharath Parsi, Andrew Whittaker, Justin Coleman, Manish Kumar, Manish Kumar, Chandrakanth Bolisetti

BENCHMARKING OF NONLINEAR SSI MODELS USING GEOTECHNICAL LAMINAR BOX DATA
Justin Coleman, William M, Anthony Tessari, Andrew Whittaker

SCALING OF UNCERTAINTY IN VALIDATION OF FLOODING SIMULATIONS: AN ILLUSTRATIVE CASE STUDY
Pragya Vaishnav, Abhinav Gupta, Nam Dinh
**Session D3-S16: Computer Aided Engineering and Software Development**  
**Session Chairs:** Harleen Sandhu, Stephen Prescott  
**Room:** Harris

**Date:** 8th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

- **DEVELOPMENT OF A PERFORMANCE EVALUATION METHOD FOR A FAULT-CROSSING TUNNEL SUBJECTED TO FAULT DISPLACEMENT**  
  Takashi Akiyama, Yuki Fujiwara, Yuta Mitsuhashi, Jorge Shimabuku

- **THE MS-ESSI SIMULATOR SYSTEM, CURRENT STATUS**  
  Boris Jeremic, Yuan Feng, Han Yang, Hexiang Wang, Fangbo Wang

- **SOIL IMPEDANCE LIBRARY FOR NUCLEAR POWER PLANTS**  
  Isabel Cuesta, Greg Mertz

- **INDUSTRIALLY VALIDATED STRUCTURAL ANALYSES: A NEW VISION ON STRUCTURAL DESIGN PROCESS AND SOFTWARE ARCHITECTURE BASED ON EDF'S CODE_ASTER**  
  Riparbelli Lorenzo, Guillaume Hervé-Secourgeon, Ioannis Christovasilis, Vladimir Cerisano Kovacevic, Luigi Paone, Jerome Beaurain, Dimitris Papaevagelou

**Special Session D3-SS1: MASTODON - Multi Hazard Analysis for Stochastic Time-Domain Phenomena**  
**Session Chair:** Chandrakanth Bolisetti  
**Room:** Tryon

**Date:** 9th Aug 2019  
**Time:** 8:00 AM - 9:45 AM

- **SPECIAL SESSION: INTRODUCTIONS AND OVERVIEW OF MASTODON**  
  Chandrakanth Bolisetti

- **SPECIAL SESSION: SEISMIC SITE-RESPONSE AND SOIL-STRUCTURE INTERACTION ANALYSIS IN MASTODON**  
  Swetha Veeraraghavan

- **SPECIAL SESSION: SOIL-STRUCTURE INTERACTION ANALYSIS OF CONVENTIONAL AND BASE-ISOLATED STRUCTURES IN MASTODON**  
  Sharath Parsi

- **SPECIAL SESSION: SEISMIC PROBABILISTIC RISK ASSESSMENT IN MASTODON**  
  Saran Bodda

- **SPECIAL SESSION: CODE CONTRIBUTION AND SOFTWARE QUALITY ASSURANCE IN MASTODON**  
  Andrew Slaughter
DIVISION IV: EXTERNAL, INTERNAL HAZARDS, AND LOADS CHARACTERIZATION

Session D4-S1: External Hazards 1
Session Chairs: Kazuma Hirosaka, Amitabh Dar

Date: 6th Aug 2019  Time: 10:15 AM - 12:00 PM

Room: Tryon

SIMULATION OF EXTERNAL FLOOD ROUTING INSIDE PLANT BUILDING USING FLUID STRUCTURE INTERACTION TECHNIQUE
Sourav Acharya, Lalaram Bishnoi, Rakesh Edumakkala, Sandeep Alajpur, Ajai Pisharady, Roshan A.D

INFLUENCE OF PARTICLE SHAPE OF FALLING ROCK-MASS ON THE MAXIMUM TRAVEL DISTANCE
Tadashi Kawai, Hitoshi Nakase, Shuji Moriguchi

ANALYSIS OF THE VOLCANIC ASHFALL HAZARD AT THE HANFORD SITE, U.S.A.
Stephen Mcduffie

A REVIEW OF AVAILABLE METHODS FOR THE PROBABILISTIC TREATMENT OF COINCIDENT AND CORRELATED FLOOD MECHANISMS
Michelle Bensi, Somayeh Mohammadi, ShihChieh Kao, Scott DeNeale, Meredith Carr, Joseph Kanney

APPLICATIONS OF GROUND IMPROVEMENT FOR NUCLEAR POWER PLANT SITES
Wei Li, Juan Gutierrez, Paul Rizzo, Victor Kostarev, Mikhail Druzhinin

Session D4-S2: External Hazards 2
Session Chairs: Stephen Mcduffie, Penti Varpasuo

Date: 6th Aug 2019  Time: 3:30 PM - 5:15 PM

Room: Queens

STRUCTURAL EFFECT CAUSED BY HIGH ENERGY ARCING FAULTS AT NUCLEAR POWER PLANTS
Susumu Tsuchino, Akihiro Matsuda, Stephen Turner

DESIGN AGAINST EXTREME WINDS IN NPP
JORGE RIERA

PARAMETER DETERMINATION AND VALIDATION OF A SIMPLE DISCRETE ELEMENT MODEL(DEM)
Hitoshi Nakase, T Iwamoto, K Agui, R Kawase, K Maeda

FUNDAMENTAL STUDY ON WIND SHIELD STRUCTURES TO PROTECT EMERGENCY VEHICLES
Takahiro Murakami, Yoshiaki Nagata, Yuzuru Eguchi, Tetsuya Hayashi, Ichiro Tamura, Hisato Matsumiya

GROUND IMPROVEMENT AS A MEANS FOR REDUCING SEISMIC DEMAND FOR NUCLEAR POWER PLANT
Wei Li, Juan Gutierrez, Paul Rizzo, Victor Kostarev, Mikhail Druzhinin
Session D4-S3: PSHA Applications
Session Chairs: Philippe Renault, Ashly Cabas
Room: Tryon

Date: 7th Aug 2019  Time: 10:15 AM - 12:00 AM

- PROGRESS OF SSHAC LEVEL 3 PSHA PROJECT FOR THE IKATA NPP, JAPAN
  Toshiaki Sakai, Kevin Coppersmith, Hiroyuki Kameda, Takashi Kumamoto, Hiroyuki Fujiwara, ShunIchi Nakagawa, Yuki Ohno, ShinIchi Matsuzaki

- PROBABILISTIC SEISMIC HAZARD ANALYSIS OF AN ALLUVIAL SITE
  Anis Mohammed Vengasseri, Lalaram Bishnoi, Roshan A.D., A Pisharady

- DESIGN RESPONSE SPECTRA FOR SEISMIC DESIGN OF NUCLEAR POWER PLANT STRUCTURES IN STANDARD DESIGN APPLICATIONS FOR NEW REACTORS
  Robert Roche-Rivera, Vaughn Thomas, Sujit Samaddar, Maryam Khan, Manas Chakravorty, Pravin Patel, Alissa Neuhausen

- CURRENT STATUS AND COUNTERMEASURES FOR KOREAN NUCLEAR POWER PLANTS
  Jaemoon Kim, Jungmook Lim, Heonwoo Kwon

- THE SIGMA-2 RESEARCH PROGRAM: IMPROVED SEISMIC HAZARD ASSESSMENT PRACTICES ADAPTED TO SITE CONDITIONS
  Guillaume Daniel

Session D4-S4: Impact - Aircraft/Drop
Session Chairs: Kazuo Dan, Fritz Henkel
Room: Sharon

Date: 7th Aug 2019  Time: 1:15 PM - 3:00 PM

- SCABBING AND PERFORATION OF REINFORCED CONCRETE WALLS DESIGNED FOR AIRCRAFT IMPACT PROTECTION
  Eric Kjolsing, Randy James, Kentaro Mori, Gentaro Nagashima

- EXPERIMENTAL STUDY ON VIBRATION CHARACTERISTICS OF SOIL UNDER DROP-WEIGHT IMPACT LOADING (1) TEST PROGRAM AND TEST RESULTS
  Yoshinori Mihara, Masuhiro Beppu, Takayuki Koyanagi, Takashi Tsuruga, Yuichi Aoyama, Makoto Takahashi, Shuichi Ito, Aya Tanaka, Takashi Nozawa

- EXPERIMENTAL STUDY ON VIBRATION CHARACTERISTICS OF SOIL UNDER DROP-WEIGHT IMPACT LOADING (2) EVALUATION AND SIMULATION ANALYSES OF TEST RESULTS
  Yoshinori Mihara, Masuhiro Beppu, Takayuki Koyanagi, Takashi Tsuruga, Yuichi Aoyama, Makoto Takahashi, Hiroyuki Nouji, Aya Tanaka, Takashi Nozawa

- IMPACT SIMULATION OF A LARGE COMMERCIAL AIRCRAFT INTO REINFORCED CONCRETE WALLS
  Kazuma Hirosaka, Hiroyuki Nouji, Noriohide Tohyama, Yoshiteru Sato, Tomohide Yoshikawa, Nobuaki Beppu, Yuichi Ida
Session D4-S5: Impact – Missile
Session Chairs: Yoshinori Mihara, Francois Tarallo  Room: Independence

Date: 8th Aug 2019  Time: 10:15 AM - 12:00 PM

ENHANCEMENT OF ENGINEERING MODELS FOR SIMULATION OF SOFT, SEMI-HARD AND HARD PROJECTILE IMPACT ON REINFORCED CONCRETE STRUCTURES
Pascal Distler, Hamid Sadegh-Azar, Christian Heckotto

EXPERIMENTAL STUDY ON SOIL PENETRATION EVALUATION AGAINST RIGID MISSILE IMPACT (1) TEST PROGRAM AND TEST RESULTS
Yoshinori Mihara, Yuji Nikaido, Masuhiro Beppu, Takayuki Koyanagi, Takashi Tsuruga, Yuichi Aoyama, Makoto Takahashi, Shota Shimazu, Yudai Furuno

EXPERIMENTAL STUDY ON SOIL PENETRATION EVALUATION AGAINST RIGID MISSILE IMPACT (2) EVALUATION AND SIMULATION ANALYSES OF TEST RESULTS
Yoshinori Mihara, Yuji Nikaido, Masuhiro Beppu, Takayuki Koyanagi, Takashi Tsuruga, Yuichi Aoyama, Makoto Takahashi, Shota Shimazu, Yudai Furuno

RESPONSE OF PLAIN CONCRETE PANELS IMPACTED BY WIND-BORNE MISSILES AT VARYING ANGLES OF OBLIQUITY
Brian Terranova, Andrew Whittaker, Leonard Schwer

Session D4-S6: Ground Motion Characterization 1
Session Chairs: Ashly Cabas, Yousef Bozorgnia  Room: Kings

Date: 8th Aug 2019  Time: 10:15 AM - 12:00 PM

SOURCE MODELING FOR REPRODUCING OF STRONG GROUND MOTIONS AND PERMANENT DISPLACEMENTS VERY CLOSE TO THE FAULT TRACE OF THE 2016 KUMAMOTO, JAPAN, EARTHQUAKE
Atsuko Oama, Masahiro Nosho, Shinya Ikutama, Takeshi Kawasaki, Haruhiko Torita, Kazuo Dan

DEVELOPMENT OF HYBRID TECHNIQUE FOR SIMULATING STRONG GROUND MOTIONS OF SUBDUCTION EARTHQUAKES
Kensuke Arai, Hiroyuki Fujiwara, Nobuyuki Morikawa, Kazuo Dan, Junichi Miyakoshi

AN OVERVIEW OF HIGH-FREQUENCY GROUND MOTION CHARACTERISTICS OF ROCK SITES IN EASTERN CANADA
Samantha Palmer, Gail Atkinson

ESTIMATION OF MEGATHRUST EARTHQUAKE SOURCE CHARACTERISTICS: ANALYSIS OF THE 1985 MEXICO AND 2015 CHILE EARTHQUAKE
Tetsuro Sasaki, Yusuke Tomozawa, Koichi Yabuuchi, Kenichi Kato, Yoshiho Kawai, Tetsumi Watanabe, Ishikawa Naoya
**Session D4-S7: Ground Motion Characterization 2**

**Session Chairs:** Iaria Mosca, Joseph Kanney

**Room:** Kings

**Date:** 8th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

- **EFFECTS OF SUBSURFACE SOIL SPATIAL VARIABILITY ON RECORDED GROUND MOTIONS AT KASHIWAZAKI-KARIWA NUCLEAR POWER PLANT**
  Ramin Motamed, Swasti Saxena, Keri Ryan

- **THE CAUSE OF DESTRUCTIVE GROUND MOTIONS ON A BASIS OF STRONG MOTION RECORDS IN JAPAN AND OTHER COUNTRIES**
  Daiki Imoto, Yusuke Tomozawa, Kenichi Kato, Yoshiyuki Takahashi, Kentaro Motoki, Tomoharu Mori, Koji Kakiuchi, Jiro Akashi, Takashi Nakao

- **UPDATED GROUND MOTION MODELS FOR AI AND CAV USING THE NGA-WEST2 DATABASE**
  Kenneth Campbell, Yousef Bozorgnia

- **ON THE USE OF SITE-SPECIFIC PROBABILISTIC SEISMIC HAZARD ANALYSIS AND THE ATTENUATION PARAMETER K IN HAZARD ASSESSMENTS OF CRITICAL FACILITIES**
  Ashly Cabas

**Session D4-S8: Seismic Time Histories**

**Session Chairs:** Joseph Kanney, Annie Kammerer

**Room:** Queens

**Date:** 8th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

- **SEISMIC PERFORMANCE OF FUEL ASSEMBLIES BASED ON INTENSITY-COMPATIBLE SETS OF RECORDED GROUND MOTION TIME HISTORIES**
  Manuel Pellissetti, Sunay Staeuble-Akcay, Andrii Nykyforchyn, Hannes Kessler

- **UNDERSTANDING THE ASSUMPTIONS IN INPUT RESPONSE SPECTRA FOR SEISMIC TIME HISTORY ANALYSES**
  Jinsuo Nie, Jose Pires, Dogan Seber

- **COMPARISON OF APPROACHES FOR SELECTING AND ADJUSTING TIME HISTORIES TO BE USED IN SEISMIC FRAGILITY ANALYSES**
  Philippe Renault, Alejandro Asfura

- **A DATABASE OF DAMAGE-CONSISTENT (INTENSITY-BASED) NATURAL AND SYNTHETIC ACCELEROMETERS FOR SEISMIC RISK ASSESSMENT**
  Philippe Renault, Marco Fasan, Jens-Uwe Klugel

- **SCALING ACCELERATION RESPONSE SPECTRA FROM ONE DAMPING TO ANOTHER**
  Lisa Anderson, James Marrone, Farhang Ostadan
Special Session D4-SS1: Designing for Extreme Hazards and Accidents
Session Chair: Andrei Blahoianu
Room: Grand Ballroom B

Date: 6th Aug 2019 Time: 1:15 PM - 3:00 PM

SPECIAL SESSION: SAFETY EXPECTATION FOR NEW NUCLEAR POWER PLANTS - IAEA PERSPECTIVE
Greg Rzentkowski

SPECIAL SESSION: RISK INFORMED DESIGN APPROACH FOR NUCLEAR CONTAINMENT
Nawal Prinja

SPECIAL SESSION: MODELLING REALISTIC RESPONSE OF NUCLEAR INSTALLATIONS UNDER BEYOND DESIGN BASIS OR DESIGN EXTENSION EARTHQUAKE
Pierre Labbe

SPECIAL SESSION: PROPOSAL TO INTRODUCE DESIGN EXTENSION LOADING CASES AND CORRESPONDING ACCEPTANCE CRITERIA IN THE ASME CODE
Nebojsa Orbovic

Special Session D4-SS2: IAEA Perspective on Nuclear Installations Safety
Session Chair: Greg Rzentkowski
Room: Grand Ballroom B

Date: 7th Aug 2019 Time: 1:15 PM - 3:00 PM

SPECIAL SESSION: CHALLENGES IN STRENGTHENING NUCLEAR SAFETY GLOBALLY
Greg Rzentkowski

SPECIAL SESSION: DESIGN OF NUCLEAR INSTALLATIONS AGAINST EXTERNAL HAZARDS
Ovidiu Coman

SPECIAL SESSION: MULTI-UNIT PROBABILISTIC SAFETY ASSESSMENT EFFORTS
Ovidiu Coman

Special Session D4-SS3: IAEA Panel Discussion on International Perspective on Nuclear Installations Safety
Session Chair: Neda Stoeva
Room: Grand Ballroom B

Date: 7th Aug 2019 Time: 3:30 PM - 5:15 PM

SPECIAL SESSION PANEL DISCUSSION - INTERNATIONAL PERSPECTIVE ON NUCLEAR INSTALLATIONS SAFETY
Greg Rzentkowski, Ovidiu Coman, Andrei Blahoianu, Emmanuel Viallet, Greg Hardy
DIVISION V: MODELLING, TESTING AND RESPONSE ANALYSIS OF STRUCTURES, SYSTEMS AND COMPONENTS

Session D5-S1: Dynamic Response of Reactor Building
Session Chairs: Sung Gook Cho, Hasan Charkas
Room: Kings

Date: 5th Aug 2019 Time: 3:30 PM - 5:15 PM

EFFECTIVENESS INVESTIGATION OF THE SEISMIC RESPONSE ANALYSIS OF A REACTOR BUILDING USING THREE-DIMENSIONAL NONLINEAR FEM
Junya Sakamoto, Takeshi Ugata, Masatoshi Okada, Takahiro Kyoda, Hiroki Motoyama, Akira Ota, Yuichiro Amano

ANALYTICAL STUDY OF THE EFFECT ON STRUCTURE RESPONSES OF UPLIFT BEHAVIOR USING 3D-FE MODELS OF REACTOR BUILDINGS
Akinobu Takada, Tatsuya Suzuki, Naohiko Tsunashima, Shoma Yamamoto, Naoto Yabushita, Takaki Tojo, Kazuki Tanaka

DATA MINING FOR ACOUSTIC EMISSION MONITORING OF A NUCLEAR CONTAINMENT WALL DURING POST-TENSIONING
Jongkwan Choi, Oguzhan Bayrak, Trevor Hrynyk, Arvin Ebrahimkhanlou, Salvatore Salamone

DYNAMIC MODEL OF THE WWER-1000 REACTOR
Yaroslav Dubyk, Oleksii Ishchenko, Andrii Bogdan

SEISMIC BEHAVIOR OF COUPLED REACTOR PRESSURE VESSEL AND REACTOR COOLANT LOOP
Saran Bodda, Ankit Dubey, Daniel Vasquez, Abhinav Gupta, Mohammed Farooq, Brian Derreberry

Session D5-S2: Seismic Response Evaluation
Session Chairs: Susumu Nakamura, Ankit Dubey
Room: Queens

Date: 5th Aug 2019 Time: 3:30 PM - 5:15 PM

CASE STUDY INVESTIGATING PROBABILISTIC AND DETERMINISTIC SAMPLING METHODS FOR DEVELOPING IN-STRUCTURE RESPONSE SPECTRA: PHASE II
Riccardo Cappa, Andrew Appelbaum, Frederic Grant

UNCERTAINTY OF DIFFERENT MODELING METHODS OF NPP BUILDING SUBJECT TO SEISMIC GROUND MOTIONS
Byunghyun Choi, Akemi Nishida, Tadahiko Shiomi, Ken Muramatsu, Tsuyoshi Takada

SEISMIC RESPONSE OF ROCKING FRAMES WITH UNSYMMETRICAL PIERS
Amitabh Dar, Dimitrios Konstantinidis, Wael El-Dakhakhni

EQUIPMENT CAPACITIES FROM EARTHQUAKE EXPERIENCE DATA FOR USE IN FRAGILITY CALCULATIONS
Riccardo Cappa, Frederic Grant, Greg Hardy, John Richards

Session D5-S3: Base Isolation 1
Session Chairs: Nebojsa Orbovic, Manish Kumar
Room: Queens

Date: 6th Aug 2019 Time: 10:15 AM - 12:00 PM

EFFECTS OF MECHANICAL PROPERTIES OF LRB ON SEISMIC PERFORMANCE OF BASE-ISOLATED NPP STRUCTURES
DuyDuan Nguyen, Bidhek Thusa, TaeHyung Lee, HyoEop Lee, HyoSang Park

SEISMIC PROTECTION OF NPP STRUCTURES BY 3-D BASE CONTROL SYSTEMS
Peter Nawrotzki, Daniel Siepe, Victor Salcedo

MODELING OF BASE ISOLATED NUCLEAR POWER PLANT SUBJECT TO BEYOND DESIGN BASIS SHAKING
Gilberto Mosqueda, Joaquin Marquez, Patrick Hughes
Session D5-S4: Base Isolation 2
Session Chairs: Gilberto Mosqueda, Victor Kostarev
Room: Kings

Date: 7th Aug 2019
Time: 1:15 PM - 3:00 PM

- Numerical Issues in Developing In-Structure Response Spectra for Seismically Isolated Nuclear Structures
  Manish Kumar, Andrew Whittaker
- Rotational and Rocking Response of Seismically Isolated Nuclear Power Plants
  Satyam Kumar, Manish Kumar
- Results of a Nonlinear Inelastic Analysis on a Piping System in a Base Isolated Plant Using an Inelastic Material Model
  Shawn Nickholds, Jason Hebeisen, Timothy Adams
- Isolation of Nuclear Containment Structures Considering Fluid-Structure Interaction
  Josh Hoekstra, Tracy Becker, Michael Tait

Session D5-S5: Base Isolation 3
Session Chairs: Chandrakanth Bolisetti, Gilberto Mosqueda
Room: College

Date: 7th Aug 2019
Time: 10:15 AM - 12:00 PM

- Damping Optimization of Base Isolated Components
  Viktor Vlaski, Joerg Moersch, Martin Sallmann
- Development of a High Performance Oil Damper for Seismic Isolated Buildings Subjected to Extremely Large Earthquakes
  Haruhiko Kurino, Takashi Nakayama, Ryusuke Fukuda, Takeshi Nakai, Tomoki Yaguchi
- Developing and Natural Scale Testing of the 3D BCS Base Isolation System
  Victor Kostarev, Peter Nawrotzki, Petr Vasiliev, Maksim Vaindrakh
- Base Isolation System for Electric Rack in Nuclear Power Plant Against Earthquake and Flying Object Impact Using Air Floating Technique
  Osamu Furuya, Sungook Cho, Hiroshi Kurabayashi, Kunio Sampei

Session D5-S6: Piping System 1
Session Chairs: Hasan Charkas, Bob Spears
Room: College

Date: 6th Aug 2019
Time: 10:15 AM - 12:00 PM

- Overview of Nuclear SCCS Seismic Verification 1: Piping and Heavy Components
  Hiroshi Abe, Nilesh Chokshi
- Practical Aspects of Decoupling Criteria for Seismic Analysis of Small Bore Piping
  Alexey Berkovsky, Oleg Kireev
- Seismic Anchors Motion for Piping Systems in Buried Galleries – Stationary Waves Method
  Ravet Sebastien, Haddad Sophien, Loic Zuchowski
- Method of Seismic Response Reduction for Crossover Piping Using Inertial Mass Damper
  Ryo Ito, Hiroshi Katayama
- Static Analysis and Health Monitoring of Pipeline Systems in NPPS with Noise Consideration
  Dhrubajyoti Datta
**Session D5-S7: Piping System 2**
*Session Chairs: Bu-Seong Ju, George Stoyanov*  
*Room: Kings*

**Date:** 6th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

- **RESULTS OF A NONLINEAR GAPPED SUPPORT ANALYSIS ON A PIPING SYSTEM IN A BASE ISOLATED PLANT**  
  Shawn Nickholds, Jason Hebeisen, Timothy Adams

- **LARGE SCALE TESTS ON THE COUPLED SYSTEM BUILDING - POST INSTALLED ANCHOR - PIPING AT EARTHQUAKE LOADING**  
  Klaus Kerkhof, Harald Garrecht, Stefan Weihe

- **A QUANTITATIVE LIMIT STATE OF THE CARBON STEEL PIPE TEE IN THE NUCLEAR POWER PLANTS UNDER IN-PLANE CYCLIC LOADING**  
  BubGyu Jeon, Sungwan Kim, DaWoon Yun

- **A NEW APPROACH TO CHARACTERIZING THE PERFORMANCE FUNCTION FOR T-JOINTS IN PIPING SYSTEMS**  
  Ankit Dubey, Abhinav Gupta

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**Session D5-S8: Impact Testing and Modeling**
*Session Chairs: Bongrae Kim, Hamid Sadegh Azar*  
*Room: Trade*

**Date:** 6th Aug 2019  
**Time:** 10:15 AM - 12:00 PM

- **FE ANALYSIS OF REINFORCED CONCRETE STRUCTURES UNDER MISSILE IMPACT USING SUB-MODELLING TECHNIQUE**  
  Genadijs Sagals, Nebojsa Orbovic, Nitheanandan Thambiayah

- **IMPROVED TOMOGRAPHIC INVESTIGATION FOR IMPACT DAMAGE CHARACTERIZATION**  
  Deborah Nerger, Falk Hille, Robabeh Moosavi, Bernhard Redmer, Marcel Grunwald, Tino Kuhn, Marcus Hering, Franz Bracklow

- **IMPACT INDUCED VIBRATIONS OF REINFORCED CONCRETE STRUCTURES DETERMINED BY LINEAR AND NONLINEAR ANALYSES OF TESTS PERFORMED WITHIN IMPACT III PROJECT**  
  Michael Borgerhoff, Christian Schneeberger, Falko Riesner, Friedhelm Stangenberg, Rainer Zinn

- **VIBRATION PROPAGATION OF REINFORCED CONCRETE STRUCTURES UNDER CONSECUTIVE IMPACTS**  
  Sara Ghadimi Khasraghy, Christian Schneeberger, Peter Zwicky, Amin Karbassi
**Session D5-S9: Shear Wall Analysis 1**

*Session Chairs: Mohamed Talaat, Fahim El Neshawy*

**Room:** Tryon

**Date:** 6th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

**STRUCTURE AND DAMAGE EVALUATIONS OF RC WALLS USING ADVANCED MEASUREMENT TECHNOLOGY AND FE ANALYSIS**

Yusuke Tanabe, Toshinobu Maenaka, Hiroshi Hashimoto, Natsuya Iwashima, Yasuo Okochi, Shinya Ishikawa

**BEYOND DESIGN EARTHQUAKE ANALYSES OF MULTI-STOREY REINFORCED CONCRETE SHEAR WALLS BY USE OF SHELL ELEMENT MODELS WITHIN BENCHMARK CASH PHASES 2 AND 2B**

Michael Borgerhoff, Philipp Brede, Urs Bumann, Tadeusz Szczesiak

**STUDY ON MODELING OUT-OF-PLANE BEHAVIOR OF SC WALLS USING SHELL ELEMENTS**

Kadir Sener, Amit Varma

**REINFORCED CONCRETE CONTAINMENT WALLS SUBJECTED TO COMBINED IN-PLANE AND OUT-OF-PLANE SHEAR STRESSES: EXPERIMENTAL INVESTIGATION AND SECTIONAL ANALYSIS**

Giorgio Proestos, Evan Bentz, Michael Collins

**EVALUATION OF THE EFFECT OF EARTHQUAKE GROUND MOTIONS ON INELASTIC ENERGY ABSORPTION FACTOR**

Juhyung Kim, HyeonKeun Yang, HongGun Park

**Session D5-S10: Shear Wall Analysis 2**

*Session Chairs: Hadi Razavi, Yoshinori Mihara*

**Room:** Kings

**Date:** 6th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

**EXPERIMENTAL STUDY ON INITIAL STIFFNESS DEGRADATION AND ITS EFFECT ON SEISMIC CAPACITY OF SHEAR WALL WITH HIGH REINFORCEMENT VOLUME PART 2: STATIC LOADING TEST ON EFFECT OF DAMAGE ON SEISMIC PERFORMANCE**

Jingyue Sun, Naoyuki Aizawa, Masayasu Kusaka, Yoshihiro Ogata, Kiyoshi Hirotani, Masaki Maeda, Hamood Alwashali, Jingya Sun, Ahmadghazi Aljuhmani

**EXPERIMENTAL STUDY ON INITIAL STIFFNESS DEGRADATION AND ITS EFFECT ON SEISMIC CAPACITY OF SHEAR WALL WITH HIGH REINFORCEMENT VOLUME PART 3: STATIC LOADING TEST ON EFFECT OF DRYING SHRINKAGE ON SEISMIC PERFORMANCE**

Masato Sakurai, Naoyuki Aizawa, Masayasu Kusaka, Yoshihiro Ogata, Kiyoshi Hirotani

**PUSHOUT BEHAVIOR OF SC WALL SHEAR CONNECTOR**

Jungil Seo, Amit Varma, Kai Zhang

**CASH: BENCHMARK ON THE BEYOND DESIGN SEISMIC CAPACITY OF REINFORCED CONCRETE SHEAR WALLS**

Etienne Gallitré, Emmanuel Viallet, Tadeusz Szczesiak, Thibaud Thénint, Olivier Fabre

**EXPERIMENTAL STUDY ON INITIAL STIFFNESS DEGRADATION AND ITS EFFECT ON SEISMIC CAPACITY OF SHEAR WALL WITH HIGH REINFORCEMENT VOLUME PART 1: RESULTS OF LONG-TERM EARTHQUAKE OBSERVATION RECORD ANALYSIS AND SIMULATION ANALYSIS**

Masayasu Kusaka, Naoyuki Aizawa, Yoshihiro Ogata, Kiyoshi Hirotani, Masato Sakurai, Masaki Maeda, Osamu Sagawara
Session D5-S11: Shear Wall Analysis 3  
Session Chairs: Nebojsa Orbovic, Michael Cohen  
Room: Trade

Date: 8th Aug 2019  
Time: 10:15 AM - 12:00 PM

BEYOND DESIGN SEISMIC CAPACITY OF SQUAT RC SHEAR WALLS: LESSONS LEARNT FROM PHASE 2 OF THE CASH BENCHMARK EXERCISE USING LS-DYNA  
Sanja Hak, Yves Mondet, Urs Bumann, Tadeusz Szczesiak, Dimitrios Zimos

SHAKING TABLE TEST FOR ELASTIC DAMPING RATIO OF RC WALLS WITH ASPECT RATIO OF 0.6 AND 1.0  
HyeonKeun Yang, Juhyung Kim, HongGun Park

NUMERICAL STUDY ON SEISMIC PERFORMANCE OF SHEAR WALL AFTER HIGH TEMPERATURE EXPOSURE  
Hiroshi Tomofuji, Takaaki Tsukada, Yuki Sasaki, Mario Fontana

NON-CONTACT LAP SPLICE CONNECTION OF SC WALL-HSC FLOOR SLAB  
Jungil Seo, Amit Varma

Session D5-S12: Response of Structures, Systems, and Components 1  
Session Chairs: Sung Gook Cho, Ata Istar  
Room: Park

Date: 6th Aug 2019  
Time: 3:30 PM - 5:15 PM

A FINITE ELEMENT MODEL FOR NHR200-II 9X9 FUEL ASSEMBLY IN DYNAMIC ANALYSIS  
XiCheng Wang, DingQu Wang, YueYuan Jiang, SongYang Li

QUALIFICATION OF PRE-DAMAGED PARAMETER FOR RC STRUCTURES UNDER POST-SEISMIC LOADING  
Rouzaud Christophe, Guillaume Rocher, Cedric Bouguelmouna, Sylvain Tordjman, Louis Renoux

DEVELOPMENT AND EFFICIENCY INVESTIGATION OF PARALLEL COMPUTING SEISMIC RESPONSE ANALYSIS FOR HIGH-FIDELITY MODEL OF LARGE-SCALE REINFORCED CONCRETE STRUCTURES  
Hiroki Motoyama, Muneo Hori

FREQUENCY DEPENDENCE OF THE SEISMICALLY INDUCED DUCTILE DEMAND IN A SDOF SYSTEM  
Pierre Labbe, Thuonganh Nguyen

SEISMIC ANALYSIS OF A SAFETY-RELATED NUCLEAR STRUCTURE FOR PRELIMINARY DESIGN – A CASE STUDY  
Qin Pan, Lisa Anderson, Luis Moreschi

Session D5-S13: Response of Structures, Systems, and Components 2  
Session Chairs: Siavash Dorvash, Hadi Razavi  
Room: Independence

Date: 7th Aug 2019  
Time: 3:30 PM - 5:15 PM

APPLICATION OF ANALYSIS FOR ASSEMBLY OF INTEGRATED COMPONENTS TO STEEL MEMBER CONNECTIONS TOWARDS SEISMIC SAFETY ASSESSMENT OF PLANT STRUCTURES  
Akemi Nishida, Norihiro Nakajima, Keisuke Matsukawa, Masami Oshima, Takahiro Murakami, Akira Satoda, Yuya Asano, ZhiHong Guo

STUDY ON A SIMULATION ANALYSIS FOR THE RESULTS OF SHAKING TABLE TEST UNDER CENTRIFUGE GRAVITY  
Shinya Ishikawa, Mamoru Furue, Yasuo Okochi, Kazuki Soma, Naohito Adachi

PURPOSE-DESIGNED & QUALIFICATION STRUCTURAL SUPPORTS FOR ITER CRYOSTAT  
Micael Connesson, Sebastien Diaz, Jeanne Duc, Laura Boutron, Laurent Patisson, Armand Gjoklaj

NUMERICAL SIMULATION OF A TRANSPORTATION CASK AND TRANSMISSIBILITY DUE TO 0.3 M DROP AND VIBRATION  
Shokoufeh Zargar Shoushtari, Ricardo Medina, Luis Ibarra
EQUIVALENT LINEAR CALCULATION OF DYNAMIC CIVIL STRUCTURE RESPONSE: A NEW EFFICIENT AND ROBUST APPROACH
Guillaume Hervé-Secourgeon, Mihaja Razafimbelo, Fabien Banci, Pierre Labbe

**Session D5-S14: Response of Structures, Systems, and Components 3**

**Session Chairs:** Ram Srinivasan, Luis Ibarra

**Room:** Park

**Date:** 8th Aug 2019  
**Time:** 10:15 AM - 12:00 PM

A REPORT OF LATEST RESEARCH PROGRESS ON THE BEYOND DESIGN BASIS DESIGN CONSIDERATIONS FOR GEN III&IV NUCLEAR POWER PLANT
Ziduan Shang, Yugang Sun, Huang Xiao, Hongliang Gou, Chenyu Chang, Boyu Han, Chunhua Wu

NUCLEAR ISLAND BASEMAT ANALYSIS FOR GENERATION III NUCLEAR POWER PLANT
Ziduan Shang, Boyu Han, Chunhua Wu, Chenyu Chang

DESIGN, VALIDATION AND ERECTION OF A SHIELD FOR THE VENTILATION STACK OF THE INSTITUT LAUE LANGEVIN
JeanMarc Vezin, Patrice Cogo, Olivier Darbouret, Thibaud Thénini

ASEISMIC PERFORMANCE EVALUATION OF A PGSFR PHTS PUMP
Seonghyeon Lee, Jaehan Lee, Sungkyun Kim

REBAR CORROSION EFFECTS ON ULTIMATE STRENGTH OF UNREINFORCED OR CFRP REINFORCED NUCLEAR COOLING TOWER
Trung Bui, Ali Limam, Amine Louhi, Nicolas Schmitt

**Session D5-S15: Seismic Response of Equipment 1**

**Session Chairs:** Shakhzod Takhirov, Keejeung Hong

**Room:** Kings

**Date:** 7th Aug 2019  
**Time:** 10:15 AM - 12:00 PM

AN EXPERIMENTAL STUDY ON CHARACTERISTICS OF VIBRATION CAUSED BY ROCKING MODES OF ELECTRIC CABINET UNDER SEISMIC LOADING
BubGyu Jeon, Inkil Choi, Seunghyun Eem, SungJin Chang, DaWoon Yun

OPTIMIZED TUNED MASS DAMPER FOR THE SEISMIC PROTECTION OF ELECTRICAL CABINETS
Nadim Mouassilam, Manfred Geiss, Markus Buck, Hristo Tschukarov

EXPERIMENTAL STUDY ON THE IN-CABINET RESPONSE SPECTRUM AMPLIFICATION FACTOR OF ELECTRICAL CABINETS DUE TO THE HIGH FREQUENCY EARTHQUAKE
Seunghyun Eem, Sangjin Lee, Inkil Choi, SungJin Chang

ILLUSTRATION OF RITZ VECTOR APPROACH FOR GENERATING IN-CABINET RESPONSE SPECTRA IN CASES OF COMPLEX BOUNDARY CONDITIONS
Pragya Vaishanav, Abhinav Gupta, Sugandha Singh, SungGook Cho

EFFECT OF HIGH-FREQUENCY SEISMIC MOTIONS ON ELECTRICAL EQUIPMENT IN NUCLEAR POWER PLANTS
Sugandha Singh, Abhinav Gupta
**Session D5-S16: Seismic Response of Equipment 2**  
**Session Chairs:** Inkil Choi, Pekka Välikangas  
**Room:** College

**Date:** 7th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

- **GENERATION OF ICRS BY FREQUENCY DOMAIN APPROACH CONSIDERING ROCKING STIFFNESS AT THE ELECTRICAL CABINET BASE**  
  SungGook Cho, Abhinav Gupta, GiHwan So, Kee Hong

- **NEW IEEE693 SEISMIC QUALIFICATION PROCEDURE OF SEISMICALLY PROTECTED HIGH-VOLTAGE SUBSTATION EQUIPMENT BY TESTING AND ANALYSIS IN A DETAILED CASE STUDY**  
  Shakhzod Takhirov, Leon Kempner Jr, Michael Riley, Eric Fujisaki, Brian Low

- **MODELING GEOMETRIC NONLINEARITIES OF SUPPORT STRUCTURES FOR SEISMIC QUALIFICATION OF SWITCHGEAR EQUIPMENT**  
  Nicholas Crowder, Abhinav Gupta, Sangwoo Lee

- **REDUCTION IN SEISMIC DEMAND BY USING EQUIPMENT STRUCTURE INTERACTION**  
  Ankit Dubey, Saran Bodda, Daniel Vasquez, Abhinav Gupta, Divakar Bhargava

**Session D5-S17: Seismic Response of Structure**  
**Session Chairs:** Shinyoung Kwag, Ram Srinivasan  
**Room:** Kings

**Date:** 8th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

- **EQUIVALENT STATIC LOADS TO ENVELOP DYNAMIC TIME HISTORY ANALYSIS RESULTS**  
  Hadi Razavi, Kirsten McKay, Evren Ulku

- **OVERVIEW OF NUCLEAR SCCS SEISMIC VERIFICATION: 2 HEAVY COMPONENTS**  
  Hiroshi Abe, Susumu Nakamura

- **PWR SNF ROD STIFFNESS AND CLADDING BEHAVIOR UNDER PINCHING LOADING**  
  Elmar Eidelpes, Ricardo Medina, Luis Ibarra

- **RESPONSE SPECTRUM BROADENING METHODOLOGY**  
  Dali Li

- **PERFORMANCE-BASED EARTHQUAKE ENGINEERING METHODOLOGY FOR SEISMIC EVALUATION OF CABLE TRAY SYSTEMS FOR NUCLEAR POWER PLANTS**  
  Khalid Mosalam, Baofeng Huang
Session D5-S18: Testing & Modeling of Concrete Structure 1
Session Chairs: Tadeusz Szczesiak, Pierre Labbe  Room: Tryon

Date: 7th Aug 2019  Time: 1:15 PM - 3:00 PM

FINITE ELEMENT ANALYSIS OF WALLS WITH ALKALI–SILICA REACTION SUBJECTED TO CONSTANT AXIAL AND CYCLIC LATERAL LOADINGS
Genadijs Sagals, Nebojsa Orbovic, Nitheanandan Thambiayah

OECD/NEA/CSNI PROJECT ASCET ON NUMERICAL SIMULATIONS OF SQUAT SHEAR WALLS WITH ALKALI-SILICA REACTION Nebojsa Orbovic, Olli Nevander, Nitheanandan Thambiayah

IMPROVEMENTS IN NUMERICAL SIMULATION OF IMPACT INDUCED VIBRATION AND DAMPING BEHAVIOUR OF A REINFORCED CONCRETE STRUCTURE TESTED IN IRIS PHASE 3 PROJECTMichael Borgerhoff, Christian Schneeberger, Matthias Stadler

EFFECTS OF STRUCTURAL RIGIDITY REDUCTION DUE TO CONCRETE CRACKING UNDER SEISMIC & THERMAL LOADS FOR NUCLEAR STRUCTURESYigit Isbiliroglu, Mustafa Ozkan, Cagri Cinkilic, Yogesh Rathod, Nish Vaidya

ALKALI AGGREGATE REACTION IN NUCLEAR CONCRETE STRUCTURESDamien Ghenassia, Etienne Gallitre, Etienne Grimal

Session D5-S19: Testing & Modeling of Concrete Structure 2
Session Chairs: Genadijs Sagals, Bassam Burgan  Room: Trade

Date: 7th Aug 2019  Time: 3:30 PM - 5:15 PM

NUMERICAL SIMULATION OF IMPACT TESTS ON COMBINED BENDING AND PUNCHING BEHAVIOUR OF REINFORCED CONCRETE SLABS WITHIN IMPACT III PROJECTMichael Borgerhoff, Christian Schneeberger, Friedhelm Stangenberg

NUMERICAL ANALYSIS OF REINFORCED CONCRETE BEAMS SUBJECTED TO ACCIDENT THERMAL LOADINGKadir Sener, Sijia Wang, Amit Varma

EVALUATION OF AGEING STRUCTURAL RESPONSE AND PREDICTION OF LEAKAGE RATE OF VERCORS MOCK-UP. NEW IMPLEMENTATION OF THE NUMERICAL MODELThibaud Thénin, Veronique Corvec, Shahrokh Ghavamian

DELAMINATION BEHAVIOR OF CURVED POST-TENSIONED CONCRETE STRUCTURESJongkwon Choi, Oguzhan Bayrak, Trevor Hrynyk

REINFORCED UNDERGROUND CONCRETE DUCTBANKS AS A BETTER POWER TRANSMISSION ALTERNATIVE TO OVERHEAD POWER LINES IN EARTHQUAKE- AND FIRE-PRONE AREASShakhzod Takhirov, Brian Low, Eric Fujisaki, Khalid Mosalam
**Session D5-S20: Soil-Structure Interaction 8**  
**Session Chairs:** Swetha Veeraraghavan, Dan Ghiocel  
**Room:** Independence

**Date:** 8th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

ASSESSMENT OF THE LOCAL DISTRIBUTION OF SOIL SPRING STIFFNESS CONSIDERING FREQUENCY DEPENDENCE OF THE FOUNDATION, SITE, AND GROUND MOTION  
Lisa Anderson, Shawn Carey, Jayprakash Amin

PRELIMINARY INVESTIGATION FOR SOIL-STRUCTURE INTERFACE BEHAVIOR: RESULTS OF EXPERIMENTS  
Efe Kurt, Justin Coleman

A STATISTICAL STUDY ON THE VARIATION OF SEISMIC RESPONSE PARAMETERS: PROBABILISTIC VS. DETERMINISTIC SOIL STRUCTURE INTERACTION ANALYSES OF NUCLEAR STRUCTURES ON SOFT SOIL CONDITIONS  
Cagri Cinkilic, Yigit Isbiliroglu, Yogesh Rathod, Nish Vaidya, Davide Kurmann, Olivier Nusbaumer

PARTIAL CORRELATION AND DEPENDENCE BETWEEN SEISMIC FRAGILITIES OF MULTIPLE ADJACENT STRUCTURES WITH SIGNIFICANT SOIL-STRUCTURE INTERACTION EFFECTS  
Mohamed Talaat, Robert Kennedy

SEISMIC DESIGN OF WELLS  
Loic Zuchowski, Ravet Sebastien, Nicolas Guilloteau, Yannick Celinain

**Session D5-S21: Seismic Fragility Analysis**  
**Session Chairs:** Baofeng Huang, Philip Hashimoto  
**Room:** Trade

**Date:** 8th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

FRAGILITY EVALUATION OF UNDERGROUND STRUCTURE CONSIDERING MULTI FAILURE MODES  
Susumu Nakamura, Toshikatsu Matsumoto

A CASE STUDY ON THE STRUCTURAL ANALYSIS AND FRAGILITY CALCULATION DUE TO SEISMIC IMPACT  
Asa Bassam, Ben Kosbab, Hamed Ebrahimian, Payman Tehrani

HIGH FREQUENCY GROUND MOTION EFFECT ON THE SEISMIC INTEGRITY OF ANCHORAGE SYSTEM  
Inkil Choi, Seunghyun Eem

CASE STUDY: CABLE TRAY SEISMIC FRAGILITY EVALUATION INVOLVING DUCTILE FAILURE OF A COLD-FORMED STEEL SECTION IN FLEXURE  
Michael Perkins, Frederic Grant

**Session D5-S22: Thermal Loading on Structures**  
**Session Chairs:** Daman Panesar, Jorge Riera  
**Room:** Kings

**Date:** 7th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

A CYCLIC BACKBONE CURVE FOR REINFORCED CONCRETE SHEAR WALLS AT ELEVATED TEMPERATURES  
Alok Deshpande, Andrew Whittaker

PREDICTION OF THERMAL STRAIN DURING LEAKAGE RATE TEST  
Tianyi Cheng, Julia Tcherner, Ohsung Kwon, Xuguang Wang, Evan Bentz

ON THE IN-PLANE RESPONSE OF REINFORCED CONCRETE WALLS FOR ACCIDENT THERMAL LOADING  
Saahastaranshu Bhardwaj, Amit Varma, Hassan Anwar

NUMERICAL STUDY ON CONCRETE SHEAR WALL BEHAVIOR UNDER /AFTER HIGH TEMPERATURE EXPOSURE  
Hiroshi Tomofuji, Yuki Sasaki, Mario Fontana, Takaaki Tsukada
Special Session D5-SS1: Addressing the Nonlinear Soil-Structure Interaction V&V Challenge
Session Chair: Natalie Doulgerakis
Room: Grand Ballroom B

Date: 7th Aug 2019  Time: 10:15 AM - 12:00 PM

SPECIAL SESSION: ADDRESSING THE NONLINEAR SOIL-STRUCTURE INTERACTION V&V CHALLENGE
Payman Tehrani, Andrew Whittaker, Michael Cohen, Ben Kosbab

Special Session D5-SS2: Steel - Plate Composite Construction: Past, Present and Future Opportunities - Part 1
Session Chair: Amit Varma
Room: Trade

Date: 7th Aug 2019  Time: 10:15 AM - 12:00 PM

SPECIAL SESSION: RANGE OF FUTURE APPLICATIONS AND OVERCOMING OBSTACLES TO WIDER INDUSTRY ACCEPTANCE
Sanjeev Malushte

SPECIAL SESSION: STEEL - RECENT RESEARCH AND PRACTICE OF STEEL CONCRETE MODULES IN CHINA
Meng Chu

SPECIAL SESSION: STEEL CONCRETE CONSTRUCTION RESEARCH AND DEVELOPMENT IN FRANCE
Julien Niepceron

SPECIAL SESSION: STEEL - PLATE COMPOSITE CONSTRUCTION - SC WALL-TO-RC WALL CONNECTIONS IN SHIN KORI NO. 5 AND 6 NUCLEAR REACTORS
Jungil Seo

SPECIAL SESSION: MOVING TOWARDS GUIDANCE FOR STEEL AND STEEL PLATE COMPOSITE (SC) STRUCTURES
Jose Pires

Special Session D5-SS3: Steel - Plate Composite Construction: Past, Present and Future Opportunities - Part 2
Session Chair: Sanj Malushte
Room: Trade

Date: 7th Aug 2019  Time: 1:15 PM - 3:00 PM

SPECIAL SESSION: STEEL-PLATE COMPOSITE CONSTRUCTION - THE BEST OF BOTH WORLDS
Amit Varma

SPECIAL SESSION: SC CONSTRUCTION AT FULL SCALE OF A DIESEL GENERATOR BUILDING – A DEMONSTRATION PROJECT
Bassam Burgan

SPECIAL SESSION: WE HAVE THE SOLUTION SO WHY IS NOBODY LISTENING?
Stewart Gallocher

SPECIAL SESSION: STEEL-PLATE COMPOSITE CONSTRUCTION IN THE AP1000 NUCLEAR POWER PLANT
Carlos Cantarero-Leal

SPECIAL SESSION: AISC DESIGN GUIDES FOR STEEL-PLATE COMPOSITE STRUCTURES: PAST, PRESENT, AND FUTURE
Saahastaramsha Bhardwaj
Special Session D5-SS4: VeRCoRs Experience - Predicting Containment Ageing, from the Mockup to the Digital Twin - Part 1

Session Chair: Guillaume Hervé-Secourgeon

Room: Tryon

Date: 8th Aug 2019  Time: 10:15 AM - 12:00 PM

Special Session: The VERCORS Program and Its Relation with the French Containment Existing and the Potential Outcomes for the Nuclear Civil Engineering Community

Pierre Labbe

Special Session: VERCORS Program - What is Going On, What Will Go On

Julien Niepceron

Special Session: How to Characterize the Airtightness of Containment Structures. Overview of Monitoring Techniques Tested on VERCORS Mock-Up

S. Desforges

Special Session: VERCORS Digital Twin and Its Tools

J. Haelewyn

Special Session D5-SS5: VeRCoRs Experience - Predicting Containment Ageing, from the Mockup to the Digital Twin - Part 2

Session Chair: Jessica Haelewyn

Room: Tryon

Date: 8th Aug 2019  Time: 1:15 PM - 3:00 PM

Special Session: Appraisal of the VERCORS 2018 Benchmark

Julien Niepceron

Special Session: Experimental Characterization of Airflow through Concrete Cracks and Its Application to VERCORS Benchmark Containment Structure

Xu Huang, Ohsung Kwon, Evan Bentz, Julia Dury

Special Session: Airtightness and Crack Modelling

Thibaud Thénint

Special Session: Airtightness and Structural Behavior

Ahti Oinonen, Kim Calonius
DIVISION VI: DESIGN ISSUES, CODES AND STANDARDS

Session D6-S1: Seismic Design
Session Chairs: George Stoyanov, Jose Pires

Date: 6th Aug 2019 Time: 10:15 AM - 12:00 PM

INTEGRATED SEISMIC ANALYSIS AND DESIGN OF SMALL MODULAR REACTOR FACILITIES USING SUBSTRUCTURE TECHNIQUES IN ANSYS
Giulio Leon Flores, Matthew Snyder, Josh Parker, Evren Ulku

SPATIAL COMBINATIONS OF SEISMIC RESPONSE SPECTRUM AND TIME-HISTORY ANALYSIS RESULTS FOR DESIGN OF NUCLEAR STRUCTURES
Yuxin Liu, Dan Nourzadeh, Wei Liu, Xue Han

COMPARISON STUDY BETWEEN 2D REINFORCED CONCRETE ELEMENT DESIGN METHODOLOGIES USING AUTOMATED DESIGN SOFTWARE FOR NUCLEAR STRUCTURES
Ahmed Alshawi, James Phillips, Takaaki Tsukada, Yasuo Nitta, Ahmed Alshawi

UPLIFT EVALUATION OF A PARTIALLY EMBEDDED STRUCTURE WITH NONLINEAR SSI
Charisis Chatzigogos, Loic Zuchowski, Myrto Anagnostopoulou, Pierre-Alain Nazé

Session D6-S2: Component Design
Session Chairs: Yoshinori Mihara, Lalaram Bishnoi

Date: 6th Aug 2019 Time: 1:15 PM - 3:00 PM

INVESTIGATION OF MODIFIED NB-3600 BRANCH PIPING STRESS ANALYSIS
Wolf Reinhardt, Hardeep Hunjan

APPLICATION OF ENGINEERING PRACTICES FOR MANAGING DEGRADATION OF PRESSURE RETAINING MECHANICAL COMPONENTS
Ata Istar

DESIGN OF ULTRA-HIGH PERFORMANCE FIBER REINFORCED CONCRETE CONTAINER FOR HIGH-LEVEL WASTE
Hesham Othman, Tamer Sabrah, Hesham Marzouk

COMPARATIVE SEISMIC EVALUATION OF CIRCULAR LIQUID STORAGE TANK ACCORDING TO PRACTICAL DESIGN GUIDELINES AND STANDARDS
SungGook Cho, SongYi Choi, WoongKi Park, GiHwan So

DISCRETE SEQUENTIAL OPTIMIZATION FOR STRUT-AND-TIE DESIGN
Gustavo Mendoza-Chavez, Charisis Chatzigogos, Guillaume Hervé-Secourgeon, Pierre-Alain Nazé, Marina Bottoni
**Session D6-S3: Fatigue and Thermal Design**

**Session Chairs:** Anastasios Alexiou, Cedric Sallaberry  
**Room:** Independence

**Date:** 6th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

- FURTHER TEST RESEARCH ON ENVIRONMENTALLY ASSISTED FATIGUE OF AUSTENITIC STAINLESS STEEL UNDER SIMULATED PLANT-LIKE TRANSIENT
  Bingbing Liang, Xu Zhang

- COMPARISON BETWEEN THERMAL EVALUATIONS OF STEEL STRUCTURES USING THE NEW AND THE OLD AISC N690 CODE METHODS
  Taha AL-Shawaf, Ben Kennedy, Amit Varma, Saahastaranshu Bhardwaj

- CREEP-FATIGUE CRACK PROPAGATION IN CURRENT INTERNATIONAL CODES FOR COMPONENTS AT ELEVATED TEMPERATURES IN NUCLEAR ENGINEERING: COMPARISON, PROGRAMMING AND CASE STUDY
  QiWei Xia, JianGuo Gong, Guopeng Lin, Fachen Xuan, BaoPing Hei, FuHai Gao, Cheng Gong

- A SOFTWARE FOR EVALUATING CREEP-FATIGUE FAILURE OF CLASS 1 NUCLEAR COMPONENTS BASED ON ASME III-5 HB
  Cheng Gong, JianGuo Gong, Fachen Xuan, Guopeng Lin, Cheng Wang, YaFei Mo, TianYi Zhang, FuHai Gao

**Session D6-S4: Codes and Licensing Issues**

**Session Chairs:** Mike Salmon, Ayman Saudy  
**Room:** Park

**Date:** 7th Aug 2019  
**Time:** 10:15 AM - 12:00 PM

- UK'S REGULATORY SAFETY ASSESSMENT OF NUCLEAR PLANTS PRESSURE PART FAILURE - A MULTI-DISCIPLINE VIEW
  Anastasios Alexiou, Jim Caul, Leslie Smith, Diego Lisbona

- RECENT DEVELOPMENTS IN ENSURING SEISMIC SAFETY OF NPPS POST-FUKUSHIMA: A CANADIAN PERSPECTIVE
  Tarek Aziz, George Stoyanov

- FROM ETC-F CODE TO EPR FLAMAVILLE FIRE PROTECTION IMPLEMENTATION
  Vincent Raillard, Sebastien Diaz

**Special Session D6-SS1: Advancing Standards for the Seismic Analysis and Design of Safety-related Nuclear Structures, ASCE 4 and ASCE 43**

**Session Chairs:** George Abatt, Andrew Whittaker  
**Room:** Tryon

**Date:** 8th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

- INTRODUCTION AND OVERVIEW OF ASCE 4 AND 43
  George Abatt

- REVIEW OF THE TECHNICAL UNDERPINNINGS OF ASCE 4 AND 43 WITH EMPHASIS ON THE LEGACY OF ROBERT KENNEDY
  Brian McDonald

- SPECIAL SESSION: PERFORMANCE-BASED EVALUATION OF NUCLEAR STRUCTURES SUBJECTED TO EXTREME GROUND MOTION
  Ben Kosbab

- SPECIAL SESSION: SEISMIC PROBABILISTIC RISK ASSESSMENT OF NUCLEAR FACILITIES SUBJECTED TO BEYOND DESIGN BASIS EARTHQUAKES
  Mohamed Talaat

- DEVELOPMENTS IN THE APPLICATION OF SEISMIC PROTECTIVE SYSTEMS TO NUCLEAR STRUCTURES
  Troy Morgan
DIVISION VII: SAFETY, RELIABILITY, RISK AND MARGINS

Session D7-S1: External Hazard Assessment
Session Chairs: Manuel Pellissetti, Ovidiu Coman
Room: Grand Ballroom B

Date: 5th Aug 2019    Time: 3:30 PM - 5:15 PM

OBJECTIVE QUANTIFICATION OF THE SEISMIC SOURCE MODEL FOR NUCLEAR SITES
Ilaria Mosca, Manuela Villani, Brian Baptie, Tim Courtney

EVALUATION OF PLANT RISK BASED ON MULTI-EVENT MODEL
Akira Satoda, Seiichiro Fukushima, Masami Oshima

PRELIMINARY STUDY ON THE QUANTIFICATION OF COMPONENT LEVEL FAILURE FREQUENCY BY MULTI-HAZARD
Junghan Kim, Minkyu Kim, Inkil Choi

STUDY ON THE RELATIONS BETWEEN SUBSURFACE STRUCTURE AND VARIABILITY OF STRONG GROUND MOTIONS AT ADJACENT SITES
Ryoichi Tokumitsu, Yasuo Uchiyama, Yu Yamamoto

Session D7-S2: Seismic Counter Measures Against Cliff Edges
Session Chairs: Toshiaki Sakai, Tsuyoshi Takada
Room: Grand Ballroom A

Date: 5th Aug 2019    Time: 3:30 PM - 5:15 PM

DEVELOPMENT OF SEISMIC COUNTERMEASURES AGAINST CLIFF EDGES FOR ENHANCEMENT OF COMPREHENSIVE SAFETY OF NPPS PART 6: CONCEPT OF CLIFF EDGES FOR NPP AGAINST EARTHQUAKES
Tsuyoshi Takada, Takenori Hida, Tatsuya Itoi, Akemi Nishida, Ken Muramatsu, Hitoshi Muta, Osamu Furuya, Keisuke Minagawa, Hidemasa Yamano

DEVELOPMENT OF SEISMIC COUNTERMEASURES AGAINST CLIFF EDGES FOR ENHANCEMENT OF COMPREHENSIVE SAFETY OF NUCLEAR POWER PLANTS PART 7 SEISMIC PERFORMANCE REQUIREMENT OF NPP
Hitoshi Muta, Yasuki Ohtori, Ken Muramatsu, Tsuyoshi Takada, Tatsuya Itoi

DEVELOPMENT OF SEISMIC COUNTERMEASURES AGAINST CLIFF EDGES FOR ENHANCEMENT OF COMPREHENSIVE SAFETY OF NUCLEAR POWER PLANTS, PART 8: IDENTIFICATION AND ASSESSMENT OF CLIFF EDGES OF NPP STRUCTURAL SYSTEM
Akemi Nishida, Hidemasa Yamano, Byunghyun Choi, Tsuyoshi Takada, Tatsuya Itoi

DEVELOPMENT OF SEISMIC COUNTERMEASURES AGAINST CLIFF EDGES FOR ENHANCEMENT OF COMPREHENSIVE SAFETY OF NUCLEAR POWER PLANTS PART 9: AVOIDANCE OF CLIFF EDGE BY INTRODUCING SEISMIC ISOLATION
Keisuke Minagawa, Osamu Furuya, Tsuyoshi Takada, Satoshi Fujita

DEVELOPMENT OF SEISMIC COUNTERMEASURES AGAINST CLIFF EDGES FOR ENHANCEMENT OF COMPREHENSIVE SAFETY OF NUCLEAR POWER PLANTS, PART 10: AVOIDANCE OF CLIFF EDGE FOR REACTOR VESSEL
Hidemasa Yamano, Akemi Nishida, Byunghyun Choi, Tsuyoshi Takada

DEVELOPMENT OF SEISMIC COUNTERMEASURES AGAINST CLIFF EDGES FOR ENHANCEMENT OF COMPREHENSIVE SAFETY OF NUCLEAR POWER PLANTS PART 11 CLIFF EDGES OF HUMAN BODY AGAINST STRONG SHAKING
Takenori Hida, Tatsuya Itoi, Tsuyoshi Takada
**Session D7-S3: Fault Displacement PRA**  
*Session Chairs: Mahesh Pandey*  
*Room: Harris*

**Date:** 6th Aug 2019  
**Time:** 10:15 AM - 12:00 PM

1. IMPROVEMENT OF FAULT DISPLACEMENT PRA METHODOLOGY AND EXAMPLE OF ITS APPLICATION TO AN ASSUMED NPP  
*(1) ESTIMATION OF CDF DUE TO FAULT DISPLACEMENT*  
Toshiaki Sakai, Futoshi Tanaka, Shingo Oda, Katsumi Ebisawa

2. IMPROVEMENT OF FAULT DISPLACEMENT PRA METHODOLOGY AND EXAMPLE OF ITS APPLICATION TO AN ASSUMED NPP  
*(2) CONTROL POINT AND ITS RELEVANT UNCERTAINTIES OF PFDHA*  
Ayumi Yuyama, Yoshinori Mihara, Hideaki Tsutsumi, Ryusuke Haraguchi, Katsumi Ebisawa

3. IMPROVEMENT OF FAULT DISPLACEMENT PRA METHODOLOGY AND EXAMPLE OF ITS APPLICATION TO AN ASSUMED NPP  
*(3) THE VALIDATION STRATEGY OF FAULT DISPLACEMENT FRAGILITY EVALUATION METHODOLOGY*  
Hideaki Tsutsumi, Yoshinori Mihara, Yuji Nikaido, Ryusuke Haraguchi, Toshiaki Sakai, Ayumi Yuyama, Katsumi Ebisawa

**Session D7-S4: Seismic PRA/PSA**  
*Session Chairs: Masato Nakajima, Antonio Godoy*  
*Room: Harris*

**Date:** 6th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

1. EFFECTS OF AFTERSHOCKS ON SEISMIC RISK  
Seiichiro Fukushima

2. INVESTIGATION ON THE FEASIBILITY OF CONDUCTING MANAGED SCOPE SEISMIC PROBABILISTIC RISK ASSESSMENTS  
Samer Elbahey, John Richards, Paul Amico, Chris Hendrix

3. DEVELOPMENT OF PROBABILISTIC SEISMIC RISK ASSESSMENT METHODOLOGY FOR SEISMICALLY ISOLATED NUCLEAR POWER PLANTS  
Minkyu Kim, Daegi Hahn, Junghan Kim

**Session D7-S5: Seismic Hazard Assessment 1**  
*Session Chairs: Minkyu Kim, Alidad Hashemi*  
*Room: Sharon*

**Date:** 6th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

1. ENHANCEMENT OF SELECTION METHOD FOR GROUND MOTION MODELS FOR PROBABILISTIC SEISMIC HAZARD ANALYSIS  
Masato Nakajima

2. INTERPRETATION OF EQUATION OF MOTION TO IDENTIFY LOAD CATEGORY OF SEISMIC RESPONSE  
Satoru Kai, Akihitio Otani

3. IMPACT OF SCALING THE USNRC AND NBK DESIGN BASIS RESPONSE SPECTRA ON EVALUATION OF HIGH FREQUENCY SENSITIVE COMPONENTS  
Amitabh Dar, Wael El-Dakhkhlni

4. RISK-CONSISTENT VERTICAL GROUND MOTION SPECTRA FOR SEISMIC PROBABILISTIC RISK ASSESSMENT  
Mohamed Talaat, Siavash Dorvash
VARIATION OF DENSITY FUNCTIONS FOR THE DISTRIBUTION OF RESIDUALS BETWEEN GMPE AND OBSERVATION DATA BASED ON THE NGA-W2 DATABASE
Hongjun Si, Hiroyuki Fujiiwara, Masato Nakajima

Session D7-S6: Seismic Hazard Assessment 2
Session Chairs: Antonio Godoy, Seiichiro Fukushima Room: Sharon

Date: 8th Aug 2019 Time: 3:30 PM - 5:15 PM

EXPLICIT INCORPORATION OF UNCERTAINTIES IN DETERMINATION OF SAFE SHUTDOWN EARTHQUAKE FOR NUCLEAR FACILITIES
Alidad Hashemi, Tarek Elkhoraibi, Nick Gregor

STRONG MOTION GENERATION AREA AND ASPERITY MODEL FOR THE 2005 MW7.8 TARAPACA, CHILE, INTRA-SLAB EARTHQUAKE
Hongjun Si, Haruhiko Torita, Kazuo Dan, Dianshu Ju, Irie Kiyoshi

EFFECTS OF INCOHERENCE OF GROUND MOTION ON A NUCLEAR POWER PLANT STRUCTURE: CASE STUDY
James Johnson, Oleg Maslemikov

ANTICIPATED HAZARDS AND RISK IMPLICATIONS OF NEW NGA EAST GROUND MOTION MODELS (GMMS) FOR CEUS PLANTS
Ram Srinivasan, Robert Sewell, Gabriel Toro

ACTIVITY OF OECD/NEA/CSNI/WGIAGE SEISMIC ENGINEERING SUB-GROUP IN THE FIELD OF SEISMIC HAZARD AND SEISMIC BEHAVIOR OF CIVIL STRUCTURES AND MECHANICAL EQUIPMENT: FINDINGS, RECOMMENDATIONS AND PERSPECTIVES
Emmanuel Viallet, Nebojsa Orbovic, Olli Nevanen, Pekka Välikangas, Etienne Gallitre, Pierre Labbe, Benjamin Richard, Diego Escrig, Ibrahim Bitar, Ludovic Filip, Tadeusz Szczesniak, Pierre Sollogoub

Session D7-S7: Risk Assessment
Session Chairs: Se-Kwon Jung, Saran Bodda Room: Sharon

Date: 7th Aug 2019 Time: 10:15 AM - 12:00 PM

QUALITATIVE PRA INSIGHTS FROM SEISMIC EVENTS
Nathan Siu, Jing Xing, Nicholas Melly, Frederick Sock, Jose Pires

SEISMIC PERFORMANCE ASSESSMENT OF REINFORCED CONCRETE CONTAINMENT VESSEL CONSIDERING GROUND MOTION RECORDED IN SOUTH KOREA
Chanyoung Kim, Myoungsu Shin

COUPLING DEGRADATION AND MAINTENANCE TO MODEL SAFETY RISK AND FINANCIAL RISK UNDER AN INTEGRATED ENTERPRISE RISK MANAGEMENT FOR NUCLEAR POWER PLANTS
Tatsuya Sakurahara, Zahra Mohaghegh, Ernie Kee, Pegah Farshadmanesh, John Beal

MULTI-HAZARD PROBABILISTIC RISK ANALYSIS OF OFF-SITE OVERHEAD TRANSMISSION SYSTEMS
Jieun Hur, Abdollah Shafieezadeh

EXTERNAL MULTI-HAZARD PROBABILISTIC RISK ASSESSMENT METHODOLOGY AND APPLICATIONS: A REVIEW OF THE STATE-OF-THE- ART
Harleen Sandhu, Yoshinori Mihara, Abhinav Gupta, Parth Patel
Session D7-S8: Risk Informed Decision Making
Session Chairs: Zahara Mohaghegh, Shinyoung Kwag
Room: Harris

Date: 7th Aug 2019  Time: 1:15 PM - 3:00 PM

APPLYING RISK-INFORMED DECISION-MAKING TO EVALUATE THE SAFETY SIGNIFICANCE OF POTENTIAL PIPING FAILURES DUE TO PRIMARY WATER STRESS CORROSION CRACKING
Sara Lyons, Matthew Homiack, David Rudland, Robert Tregoning

OPTIMIZING THE SEISMIC DESIGN OF ADVANCED NUCLEAR REACTORS
Chandrakanth Bolisetti, Andrew Whittaker, Justin Coleman, Sharath Parsi, William M, Kevin Kramer, Paul Kirchman, Jason Redd

RISK INFORMED SEISMIC CRITERIA APPROACH FOR 10CFR 50.69 CLASSIFICATION
Greg Hardy, John Richards

RISK INFORMED VALIDATION FRAMEWORK FOR EXTERNAL FLOODING SCENARIO
Saran Bodda, Abhinav Gupta, Nam Dinh

Session D7-S9: Seismic Fragility Assessment 1
Session Chairs: Nathan Siu, Baofeng Huang
Room: Harris

Date: 7th Aug 2019  Time: 3:30 PM - 5:15 PM

NONLINEAR FINITE ELEMENT ANALYSIS OF SEISMIC LOADS ON RPV INTERNALS
Manuel Pellissetti, Eugen Füttner, Roland Hilpert, Johannes Schmidl, Sunay Staeuble-Akcay, Andrii Nykyforchyn

SC WALL INTEGRITY AND SERVICEABILITY ANALYSIS REGARDING SAFE-SHUTDOWN-EARTHQUAKE (SSE) SCENARIO
Huang Xiao, Ziduan Shang

SEISMIC FRAGILITY EVALUATION OF ANCHORED FLAT-BOTTOM STORAGE TANKS ON RING FOUNDATIONS
Abhinav Anup, Philip Hashimoto, Robert Kennedy

PROBABILISTIC SURVIVABILITY EVALUATION OF STRUCTURES AND COMPONENTS ASSIGNED FOR DECS
Ayman Saudy, Medhat Elgohary

A PROBABILISTIC ASSESSMENT OF PWR SNF ROD PINCHING FAILURE CONSIDERING HYDRIDE-RELATED CLADDING EMBRITTLEMENT
Elmar Eidelpes, Ricardo Medina, Luis Ibarra

Session D7-S10: Seismic Fragility Assessment 2
Session Chairs: Frederic Grant, Susumu Nakamura
Room: Grand Ballroom B

Date: 6th Aug 2019  Time: 10:15 AM - 12:00 PM

PARTIALLY CORRELATED FRAGILITIES USING DAMAGE CAPACITY APPROACH IN SEISMIC PRA
Sekwon Jung

SEISMIC FRAGILITY EVALUATION OF METAL FLAT-BOTTOM STORAGE TANKS WITH SHORT ANCHOR BOLT CHAIRS
Abhinav Anup, Philip Hashimoto, Hojung Lee, Robert Kennedy

SEISMIC FRAGILITY BASED ON CONDITIONAL MEAN SPECTRA FOR MULTIPLE EARTHQUAKE SCENARIOS
Jihun Park, Sheongha Jeon, Park Wonho, BeomSeok Kim

PROBABILISTIC-BASED APPROACH FOR DEVELOPING SOIL LIQUEFACTION FRAGILITIES AT NUCLEAR POWER PLANT SITES
Thomas Houston, Greg Mertz, Andrew Maham

REINFORCED CONCRETE SHEAR WALL CAPACITY ADVANCES
Greg Hardy, John Richards, Tim Graf, Riccardo Cappa
Session D7-S11: Probabilistic Soil-Structure Interaction
Session Chairs: Ryusuke Haraguchi, Swetha Veeraraghavan

Date: 8th Aug 2019 Time: 10:15 AM - 12:00 PM

PROBABILISTIC SSI ANALYSIS OF A REACTOR BUILDING IN ADVANCE OF FRAGILITY ANALYSES
Tobias Richter, Manuel Pellissetti, Vladimir Nincic, Sunay Staebule-Akcay, Andrii Nykyforchyn, Peter Rangelow

NONLINEAR RESPONSE OF A STRUCTURE WITH SIGNIFICANT SOIL-STRUCTURE INTERACTION EFFECTS FOR APPLICATION TO SEISMIC FRAGILITY EVALUATION
Philip Hashimoto, Juan Jimenez-Chong, Robert Kennedy, David Nakaki

SEISMIC SOIL-STRUCTURE INTERACTION ANALYSIS OF AN EMBEDDED STRUCTURE WITH PARTIALLY BONDED SIDE-SOIL
Cameron Samuelson-Sanford, Juan Jimenez-Chong, Mohamed Talaat, Philip Hashimoto, James Johnson, David Nakaki, Oleg Maslenikov

PROBABILISTIC SSI ANALYSIS SENSITIVITY STUDIES FOR SEISMICALLY BASE-ISOLATED NUCLEAR STRUCTURES SUBJECTED TO COHERENT AND INCOHERENT MOTIONS
Dan Ghiocel

Special Session D7-SS1: The Global Impact of Robert P. Kennedy - Personal and Professional
Session Chair: Robert J. Budnitz

Date: 5th Aug 2019 Time: 3:30 PM - 5:15 PM

SPECIAL SESSION: THE EARLY DAYS: UNDERGROUND AT THE NEVADA TEST SITE, AND BEER
Robert Bachman

SPECIAL SESSION: ROBERT KENNEDY’S INFLUENCE ON PROBABILISTIC SEISMIC ANALYSIS OF NUCLEAR FACILITIES – THE SSMRP AND FOLLOW-ON ACTIVITIES
James Johnson

SPECIAL SESSION: ROBERT KENNEDY’S INFLUENCE ON PRACTICAL METHODS FOR SPRA (SEISMIC PROBABILISTIC RISK ASSESSMENT) – RESPONSE ANALYSIS, FRAGILITY ANALYSIS
Greg Hardy

SPECIAL SESSION: ROBERT KENNEDY’S INFLUENCE ON USING PROBABILISTIC CONCEPTS IN DOE EARTHQUAKE ENGINEERING STANDARDS AND IN ASCE 4 AND 43
Michael W. Salmon

SPECIAL SESSION: ROBERT KENNEDY’S INFLUENCE ON NUCLEAR SEISMIC-SAFETY REGULATIONS
Nilesh Chokshi
DIVISION VIII: ISSUES RELATED TO OPERATIONS, INSPECTION AND MAINTENANCE

Session D8-S1: Alkali Silica Reaction
Session Chairs: Joe Vasquez, Vivek Agarwal  Room: Harris

Date: 5th Aug 2019  Time: 3:30 PM - 5:15 PM

ASSESSMENT OF EARTHQUAKE DAMAGED RC SHEAR WALLS
Jonathan Rivera, Andrew Whittaker

ASSESSING ASR IN REINFORCED CONCRETE NUCLEAR POWER PLANT STRUCTURAL MEMBERS
Nolan Hayes, John Ma, Qiang Gai, Yann Le Pape, Ammar Abdel-Elssamid, Silhem Pape, Eric Giannini, Zhongguo Ma, Alain Giorla

AGING AND RENEWAL OF DEFORMATION MEASUREMENT OF PCCV STRUCTURE
Jan Stepan

MONITORING ALKALI SILICA REACTION OF LARGE AND MEDIUM-SCALE CONCRETE SPECIMENS USING ACOUSTIC EMISSION
Vafa Soltangharaei, Rafal Anay, Li Ai, Yann Le Pape, John Ma, Paul Ziehl

THERMAL MODULATION OF NONLINEAR ACOUSTIC WAVE FOR EVALUATION OF MICROCRAKING DAMAGE IN CONCRETE
Jinying Zhu, Hongbin Sun

Session D8-S2: Non-Destructive Evaluation
Session Chairs: Hasan Charkas, Joe Vasquez  Room: Harris

Date: 8th Aug 2019  Time: 10:15 AM - 12:00 PM

DESIGN, CONSTRUCTION, AND NDT OF A MOCK-UP FOR REINFORCED CONCRETE WALLS IN NPP
Fahim Al-Neshawy, Miguel Ferreira, Edgar Bohner, Teemu Ojala, Ville Sjoblom, Ernst Niederleithinger, Ute Effner, Jari Puttonen

NON-DESTRUCTIVE EVALUATION TECHNIQUES FOR EVALUATION OF NUCLEAR CONCRETE STRUCTURES WITH LIMITED ACCESSIBILITY
Julia Tcherner, Larry Olson, Dennis Sack, Patrick Miller

STRUCTURAL INTEGRITY ASSESSMENT OF TURBINE DRIVEN FEED PUMP LINE DUE TO WATER HAMMER
Nachiketa C, Ramesh T, Lalaram Bishnoi, S Utkarsh

ESTIMATING DEGRADATION GROWTH RATE AND TIME OF COMPONENT REPLACEMENT FROM LIMITED INSPECTION DATA USING MIXED-EFFECTS MODELLING
Mikko Jyrkama, Mahesh Pandey, Ming Li

ADVANCED NDE TECHNOLOGIES FOR DETECTING AND MANAGING AGING AND DEGRADATION IN REACTOR COMPONENTS
Pradeep Ramuhalli, Matthew Prowant, H Qiao, M Good, C Henager
DIVISION IX: FUEL CYCLE FACILITIES, WASTE MANAGEMENT AND DECOMMISSIONING

Session D9-S1: Spent Fuel Storage
Session Chairs: Shunichi Suzuki, Mohamed Bourham

Date: 5th Aug 2019          Time: 3:30 PM - 5:15 PM

DEVELOPMENT OF FUEL DEBRIS CANISTER
Motoki Nakane, Hideaki, Toshihiro Matsuoka, Tomoya Iwashima, Yuichi, Nodoka Miyamoto, Kazuma Hirosaka, Noboru Saito, Manabu Ueno

SIMULATION AND EXPERIMENTS OF MULTI-LAYER DRY CASK SHIELDING MATERIALS
Daniel Moneghan, Mohamed Bourham, Sean Kerrigan, Zeinab Alsmadi, Zainab Alnoamani

STRUCTURAL QUALIFICATION OF ISFSI PAD TO NUHOM MATRIX DRY STORAGE ASSEMBLY INSTALLATION
Kamil Nizamiev, Charles Papadelis, Paul Wilson

CASE STUDY: ISSUES INVOLVED IN STACKED SPENT FUEL MONOLITH TO EXISTING INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)
Charles Papadelis, Kamil Nizamiev

Session D9-S2: Waste Management
Session Chairs: Christophe Marquie, Rick Reid

Date: 6th Aug 2019          Time: 1:15 PM - 3:00 PM

BOUNDARY DEPTH BETWEEN LLRW AND CLW AFFECTED BY FLUCTUATION OF ELEMENTAL COMPOSITION
Norikazu Kinoshita, Takuma Noto, Kazuaki Kosako, Motoyuki Asada, Kohei Urabe, Akane Tada, Kazuyuki Torii

ARMAKAP CEMENT FOR NUCLEAR RADIATION SHIELDING
Daniel Moneghan, Jacob Eapen, Mohamed Bourham, Ramsey Kilani, Walid Mustafa

CORROSION RESISTANCE OF ARMAKAP CEMENT FOR NUCLEAR APPLICATIONS
Daniel Moneghan, Jacob Eapen, Mohamed Bourham, Walid Mustafa, Ramsey Kilani

CONCRETE AGING IN CONTAINMENT BUILDING AND DEEP GEOLOGICAL DISPOSAL FACILITIES: THE ODOBA PROJECT
Christophe Marquie, Benjamin Richard, Alexandre Dauzeres, Georges Nahas

A NETWORK LEVEL UNDERSTANDING FOR USED NUCLEAR FUEL TRANSPORTATION
Eric Goforth, Wael El-Dakhakhni, Mohamed Ezzeldin, Lydell Wiebe
DIVISION X: ADVANCED AND SMALL MODULAR REACTORS

Session D10-S1: Regulatory Framework and Codes & Standards
Session Chairs: Rob Hayes, Mike Cohen
Room: College

Date: 6th Aug 2019 Time: 3:30 PM - 5:15 PM

CSA GROUP NUCLEAR STANDARDS AND APPLICABILITY TO SMALL MODULAR REACTORS
Larisa Logan, Juris Grava, Sonia Iqbal

SUMMARY OF OPERATIONAL EXPERIENCE FOR ADVANCED NON-LIGHT WATER REACTORS: MATERIALS AND STRUCTURAL INTEGRITY ISSUES
Frederick Brust, Matthew Gordon, Richard Turk, Raj Iyengar

PERSPECTIVES ON THE DESIGN OF PRESSURE BOUNDARY SYSTEMS AND COMPONENTS IN SMALL MODULAR REACTORS
Seyun Eom, Ken Kirkhope, Sadek Nabel, Nitheanandan Thambiayah, Raoul Awad

BUILDING A BETTER NUCLEAR LICENSING PROCESS
Julie Jarvis, Timothy Cahill, Lynn Vanderpoel, Richard Lagdon

Session D10-S2: Advances in Operating Experience and Research and Development
Session Chairs: Frederick Burst, John Richards
Room: Sharon

Date: 8th Aug 2019 Time: 1:15 PM - 3:00 PM

SITE MITIGATION FOR CRITICAL INFRASTRUCTURE USING SEISMIC METAMATERIALS
Jeffrey Cipolla, A Shakalis, P Ghisbain

ASSESSMENT OF POWDER PROCESSING METHODS FOR PRODUCTION OF A SMALL MODULAR REACTOR VESSEL COMPONENT ASSEMBLIES VIA POWDER METALLURGY-HIP
David Gandy, William Kyffin, William Burdett, Victor Victor Samarov, Miles Tulley, Steven Hall

A FUTURE GENERATION THERMAL BREEDER USING NATURAL URANIUM FUEL AND BE MODERATION
Robert Hayes

INVESTIGATION OF STEEL-PLATE COMPOSITE (SC) WALL BEHAVIOR FOR BEYOND DESIGN BASIS FIRE EVENTS
Saahastaranshu Bhardwaj, Amit Varma, Shivam Sharma
DIVISION XI: SEVERE ACCIDENT MANAGEMENT AND STRUCTURAL EVALUATION

Session D11-S1: Containment Response and Assessment Under Severe Accident Loads
Session Chairs: Alfred Hathaway, David Luxat Room: Park

Date: 7th Aug 2019 Time: 1:15 PM - 3:00 PM

METHODS FOR FAILURE ASSESSMENT OF NPP PRESSURE BOUNDARY UNDER SEVERE ACCIDENT LOADING
Christoph Blaesius, Juergen Sievers

NEWLY INTRODUCED SAFETY ASSESSMENT ON RESTARTED NUCLEAR POWER PLANT IN JAPAN
Kazutoshi Eto

IMPACT ASSESSMENT OF ITER RC STRUCTURES – 3RD PHASE OF THE OCDE-IRIS BENCHMARK
Javier Ezeberry, Didier Combescure, Jordi Ayneto

STRUCTURAL ASSESSMENT OF A FRENCH DOUBLE REACTOR CONTAINMENTS VESSEL’S: MECHANICAL STUDY IN SITUATION OF SEVERE ACCIDENT AND EXPERIMENTAL RESEARCH PERSPECTIVE
Benjamin Richard, Francois Tarallo, Georges Nahas, Julien Clement

LEAK TEST ON POLYUREA LINING POOL WALL AGAINST SEISMIC AND ACCIDENTAL LOAD
Ono Hideo, Okunaka Ryosuke, Manabe Yoshiro, Ninomiya Yoshihisa, Kajiwara Yusuke, Urabayashi Teruhito, Iwasaki Mitsuhiro, Yoshimoto Minoru, Asano Tetsuya, Watanabe Hideyoshi, Hiramatsu Masako

Session D11-S2: Characterization of Pressure Boundary Systems Under Severe Accident Conditions and Mitigation of Consequences
Session Chairs: David Luxat, Alfred Hathaway Room: Park

Date: 7th Aug 2019 Time: 3:30 PM - 5:15 PM

APPLICATION OF FRACTURE CONTROL TO NUCLEAR COMPONENTS FOR MITIGATION OF ACCIDENT CONSEQUENCE
Naoto Kasahara, Izumi Nakamura, Takuyo Sato, Takashi Wakai

DISCUSSION ON FAILURE BEHAVIOUR OF PIPING SYSTEMS SUBJECTED TO EXCESSIVE SEISMIC LOADS
Izumi Nakamura, Naoto Kasahara

DEVELOPMENT OF EXTREMELY HIGH TEMPERATURE MATERIAL PROPERTY EQUATIONS AND PHYSICAL PROPERTY VALUES ON AUSTENITIC STAINLESS STEEL
Takashi Onizawa, Naoto Kasahara

FREQUENCY EFFECTS ON RATCHETING OF PIPING UNDER SEISMIC LOADING – INVESTIGATION ON RATCHETING OF BEAM MODEL
Jinqi Lyu, Naoto Kasahara, Md Abdullaah Al Bari
DIVISION XII: CONSTRUCTION MANAGEMENT, COST AND SCHEDULING

Session D12-S1: Ways to Save Construction Cost / Scheduling of Nuclear Facilities
Session Chairs: Adeola Adediran, Jim Rispoli

Date: 6th Aug 2019  Time: 10:15 AM - 12:00 PM

REINFORCEMENT IN NUCLEAR CONSTRUCTION – HOW MUCH IS TOO MUCH?
Javeed Munshi, Jaspal Saini

COST BASIS FOR UTILIZING SEISMIC ISOLATION IN NUCLEAR POWER PLANTS
Kaivalya Lal, Andrew Whittaker, David Scott, Sharath Parsi, Michael Cohen, Benjamin Kosbab, Koroush Shirvan, Paul Kirchman

REDUCE OPTIMISM BIAS - INTRODUCTION TO REFERENCE CLASS FORECASTING
James Devine

CASE STUDY ON PROBLEM SOLVING BY BUILDING TRUST AND COMMUNICATION WITH LOCAL RESIDENTS NEAR NUCLEAR POWER PLANT SITE
HeungDae Won, Junghyep Lee, SeungWon Maeng

THE COMBINATION OF MODULAR AND COMPOSITE CONSTRUCTION TECHNOLOGY IN GENERATION III NPP DESIGN-BUILD
Ziduan Shang, Ziduan Shang, Hongliang Gou, Chunhua Wu, Chenyu Chang, Boyu Han, Yugang Sun, Huang Xiao

Special Session D12-SS1: Versatile Test Reactor (VTR)
Session Chairs: Mike Mayfield, Adeola Adediran

Date: 8th Aug 2019  Time: 3:30 PM - 5:15 PM

SPECIAL SESSION: VERSATILE TEST REACTOR OVERVIEW
Eric Loewen

SPECIAL SESSION: DIGITAL ENGINEERING APPLICATION ON THE VERSATILE TEST REACTOR
Christopher Ritter

INTEGRATED APPROACH TO DESIGN AND CONSTRUCTION OF A NUCLEAR FACILITY USING BUILDING INFORMATION MODELING
Alexis McCarn, Jamie Gachie, Jay Parmar, Kevin Han, Abhinav Gupta

PERFORMANCE MONITORING OF MODULAR CONSTRUCTION THROUGH A VIRTUALLY CONNECTED PROJECT SITE AND OFF-SITE MANUFACTURING FACILITIES
Kevin Han, Abhinav Gupta
**Special Session D12-SS2: Optimizing New Build Constructability - Part 1**

**Session Chairs:** Guillaume Hervé-Secourgeon  
**Room:** Trade

**Date:** 6th Aug 2019  
**Time:** 1:15 PM - 3:00 PM

**SPECIAL SESSION: DESIGN & OPTIMIZATION OF RC STRUCTURES FOR NPP: SUMMARY OF ACI 349**  
Amit Varma

**SPECIAL SESSION: WESTINGHOUSE AP1000 SC WALL LESSONS LEARNED AND FUTURE OPTIMIZATION**  
Stuart Kellner

**SPECIAL SESSION: STRUCTURAL ENGINEERING VISUAL DATA POST-PROCESSING AND REINFORCEMENT OPTIMIZATION TOOLS DEVELOPMENT IN THE NUCLEAR FIELD**  
Vladimir Cerisano Kovacevic

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**Special Session D12-SS3: Optimizing New Build Constructability - Part 2**

**Session Chairs:** Guillaume Hervé-Secourgeon  
**Room:** Trade

**Date:** 6th Aug 2019  
**Time:** 3:30 PM - 5:15 PM

**SPECIAL SESSION: INDUSTRIALLY VALIDATED STRUCTURAL ANALYSES: A NEW VISION ON STRUCTURAL DESIGN PROCESS AND SOFTWARE ARCHITECTURE BASED ON EDF’S CODE**  
Riparbelli Lorenzo

**SPECIAL SESSION: ON STRUCTURAL FINITE ELEMENT MODELING STRATEGIES AND THEIR INFLUENCE ON THE OPTIMIZATION OF FINAL CONSTRUCTABILITY OF RC STRUCTURES**  
Guillaume Hervé-Secourgeon

**SPECIAL SESSION: HINKLEY POINT C EPR EXPERIENCE FOR DESIGN AND CONSTRUCTION INTEGRATION USING BUILDING INFORMATION MODELLING (BIM)**  
E. Petre Lazar

**SPECIAL SESSION: CONSTRUCTION TIME SCHEDULE: ASSESSING UNCERTAINTIES TO IMPROVE CONFIDENCE**  
Emmanuel Viallet