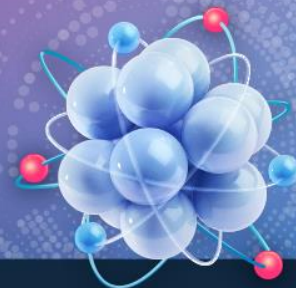


THE 30th CONFERENCE of the Nuclear Societies in Israel

7-9 June 2022 | Daniel Hotel, Herzliya, Israel



Tuesday, June 7, 2022

08:00-09:00 Registration, Registration Desk

09:00-09:10 Conference Opening, Plenary Hall

Ilan Yaar and Raquel Bar-Deroma
Conference Co-chairs

09:10-10:40 Plenary 1, Plenary Hall

Moderators: Ilan Yaar & Jean Koch

09:10 IRPA Guiding Principles for Establishing a Radiation Protection Culture

Bernard Le Guen
IRPA President, France

09:40 The Swelling Equation: On the Use of Heavy-Ion High-Displacement-Rate Swelling to Accurately Predict Swelling in Nuclear Reactors

Michael Fluss
Nuclear Materials Technology Consultancy, Pleasanton, California, USA

10:10 Uranium Disposition Efforts in the United States

Larry R. Avens
Strategic Management Systems, Inc., Tennessee, USA

10:40-11:00 Coffee Break & Exhibition Viewing, Poseidon Hall

11:00-12:40 Session 1 - Research Reactors, Venus Hall

Moderator: Erez Gilad

11:00 Accurate Characterization of the Nuscale Source Term for Accident Analysis Due to High-Explosive Warhead Direct Hit

Christian Castagna

11:20 MPFD Type Neutron Sensor for in-Core Measurements

Udi Wengrowicz

11:40 Accurate Characterization of Highly Localized Flux Effects in the Israeli Research Reactor 1 Using Monte Carlo Burnup Analysis

Hadi Abuzlf

12:00 Experimental Estimation of the Kinetic Parameters of MINERVE ZPR

Guy Shtotland

12:20 Modeling and Simulations of the Dynamic Insertion of Control Rods into a Nuclear Reactor

Zohar Sahray

11:00-12:40 Session 2 - Radiation Protection and Environmental Radioactivity, Aphrodite

Moderator: Bernard Le Guen

11:00 Eleven Years after Fukushima Daiichi Accident: Nuclear and Radiological Safety Aspects

Zoom Presentation

Gustavo Caruso

11:20 Effect of Atmospheric Temperature on Underground Radon: A Laboratory Experiment

Gustavo Haquin

11:40 A Rapid Method to Detect Low Concentrations of ^{210}Pb in Drinking Water Using MnO_2 Fibers

Gustavo Haquin

12:00 Towards Reconsidering the Linear No-threshold Paradigm: Longevity-Hormetic Effects of Natural Radiation

Elroei David

12:20 Safety Culture

Yael Fried

12:40-13:40 Lunch Break & Exhibition Viewing, Poseidon Hall

14:00-15:00 Session 3 - Nuclear Energy, Venus Hall

Moderator: Larry Avens

14:00 Stability and Bifurcation Analysis of Simplified Reactor Models: Application to Generation IV HTR-type Microreactors

Doron Sivan

14:20 Best-estimate Integral Simulation of SMR Transient Events

Ezra Elias

14:40 Safety and Security of Ukraine's Nuclear Power Plants during the War with Russia

Barak Tavron

13:40-15:00 Session 4 - Dosimetry, Aphrodite Hall

Moderator: Lior Epstein

13:40 Contrast Enhancement of C-banding Images by Using the CLAHE Algorithm

Micha Kravits

14:00 A DAPI-based Modified C-Banding Technique for a Rapid Quantification of Centromeres and Chromosomes

Raphael Gonen

14:20 Accommodation of Proton PBS System in a Common Linac Vault; A shielding Simulation

Sion Koren

14:40 The Contribution of the Beta and Gamma Radiation to the Dose from Diffusing alpha-Emitters Radiation Therapy (DaRT)

Lior Epstein

15:00-15:20 Coffee Break & Exhibition Viewing, Poseidon Hall

15:20-16:40 Session 5 - Emergency Planning and Risk Assessment, Venus Hall

Moderator: Barak Tavron

15:20 Adaptive Real-time Protective System for a Nuclear Power Plant Auxiliary Facility: A Feasibility Study

Irad Brandys

15:40 Vulnerability of Partially Buried NuScale Small Modular Reactor to Internal Munition Hits

Igal Shohet

16:00 Vulnerability of Tunneled NuScale SMR to Earth Penetration Weapon Hits

Igal Shohet

16:20 Vulnerability of Buried NuScale SMR External wall to Munition Hits and Upgrading Options

Matan Levi Zedek

15:20-16:40 Session 6 - Nuclear Forensics, Aphrodite Hall

Moderator: Ladislav Havela

15:20 Collaborative Material Exercise 7 – International Nuclear Forensics Exercise

Michal Brandis

15:40 The Oxygen Isotopes Composition of Uranium Oxides in the Nuclear Fuel Cycle as a New Signature for Nuclear Forensics Investigation

Maor Assulin

16:00 Nuclear Forensics – Fission Track Analysis – Simulation and Image Analysis including GEANT Fission Simulation and AI Fission Track Recognition

Itzhak Halevy

16:40 Criteria and Examination of a New Radiation Detector for Israeli First Responders

Michal Brandis

Wednesday, June 8, 2022

08:00-09:00 Registration, Registration Desk

09:00-10:30 Plenary 2, Plenary Hall

Moderators: Raquel Bar Deroma & Chen D. Dubi

09:00 What we Learned about Radiation Effects from Large-scale Animal Studies

Gayle Woloschak

Northwestern University, USA and Vice-Chair of Committee 1 (Radiation Effects) of ICRP

Zoom Presentation

09:30 Alpha-DaRT: Breakthrough Technology in Radiation Therapy

Lior Arazi

Unit of Nuclear Engineering, Ben-Gurion University of the Negev, Israel

10:00 Out-of-Field Doses in Radiotherapy

Filip Vanhavere

SCK CEN, Belgian Nuclear Research Centre, Belgium

10:30-10:50 Coffee Break & Exhibition Viewing, Poseidon Hall

10:50-12:30 Session 7 - Simulation and Numerical Methods, Venus Hall

Moderator: Lior Arazi

10:50 Investigation on the Accuracy of the Ronen Method in Proximity of Vacuum Boundary

Johan Cufe

11:10 The Ronen Method - A high-accuracy Neutron Diffusion Calculation based on Integral Transport Theory

Roy Gross

11:30 Fast Simulation for Directional Multi-detectors Spatial Optimization

Nadav Ben David

11:50 Simulation of Noise Experiments Using an SDE Model

Eshed Magali

12:10 Analysis of a Stable Bathtub Vortex in a Rotating Container

Shay David Amar

10:50-12:30 Session 8 - Radiation in Medicine 1, Aphrodite Hall

Moderator: Filip Vanhavere

10:50 Radiation Reduction in Pediatric Cardiac Catheterization: Can We Go Even Lower?

Sharon Borik¹, Y. Yitzhak¹, Y. Weiner¹, D. Mroczek², LNB Benson²

¹*Pediatric Heart Institute, Sheba Medical Center, Tel Aviv University, Ramat Gan, Israel*

²*Division of Cardiology, Hospital for Sick Children, University of Toronto, Toronto, Canada*

11:10 Assessing Patient Effective Dose for Spine Surgery using Intraoperative Cone-Beam CT

Gabriel Bartal¹, Avi Ben-Shlomo², Francesco Costa³, Shay Shabat⁴

¹*Tel Aviv-Yafo, Israel*

²*Radiation Protection Domain, Soreq NRC, Yavne, Israel*

³*Spine Surgery Unit, Dept of Neurosurgery, Fondazione IRCCS Istituto Nazionale Neurologico "C. Besta", Milan, Italy*

⁴*Spinal Care Unit, Orthopedic Surgery Dept, Meir Medical Center, Kfar Saba, Israel*

11:30 The Evolution of PET/CT Scanners at Rambam Health-care Campus: From First Hybrid to First-in-class Solid State Extended Axial Bore Scanners

Tala Palchan Hazan¹, John A. Kennedy^{1,2} Zohar Keidar^{1,2}

¹*Department of Nuclear Medicine, Rambam Health Care Campus, Haifa, Israel*

²*Ruth and Bruce Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel*

11:50 Appropriateness of Utilizing Imaging in Musculoskeletal Medicine: Radiation and Clinical Considerations

Aharon (Roni) Finestone

Department of Orthopaedic Surgery, Shamir (Assaf HaRofeh) Medical Center, Zeriffin, Israel

12:10 Dosimetry Audits in Radiotherapy: Key Component in Achieving High Quality Treatments

Annette Wygoda

Radiation Control Unit, Medical Technology, Health Information and Research Directorate, Ministry of Health, Jerusalem, Israel

12:30-13:30 Lunch Break & Exhibition Viewing, Poseidon Hall

13:30-15:10 Session 9 - Artificial Intelligence and Computational Physics, Venus Hall

Moderator: Izhar Neder

13:30 SarAI: Reinforcement Learning Based Automatic Tuning Framework for SARAF

Nadav Schneider

13:50 Fast Artificial Intelligence Neutron dEtector (FAINE)

Nadav Schneider

14:10 Monte Carlo simulations for Ghost Imaging

Rachel Hen Shukrun

14:30 Calculation of Neutronic Transients using a Novel Quasi-static Method

Oren Tal

14:50 Neutronic Simulation Methodology for a Neutrino-physics Experiment at the European Spallation Source

Christian Castagna

13:30-15:10 Session 10 - Radiation in Medicine 2, Aphrodite Hall

Moderator: Gabriel Bartal

13:30 Advantages and Limitations of the Use of Active Personal Dosimeters in Hospitals

SCK CEN, Belgian Nuclear Research Centre, Belgium

Filip Vanhavere

13:50 Radiation Safety During Fluoroscopy Guided Therapy

Zalman Itzhakov

Interventional Radiologist Consultant & the Director of Diagnostic Imaging, E.Wolfson Medical Center, Israel

14:10 Patient Contact Shielding in Diagnostic Radiology - New Guidelines

Raquel Bar Deroma

Radiotherapy, Rambam Health Care Campus, Haifa, Israel

14:20 Personal Protective Equipment (PPE) – Standards Update

Sigalit Haruz-Waschitz

Medical Physics Section, Shamir (Asaf Harofeh) MC, Select One, Israel

14:30 Local and Systemic Safety of Diffusing Alpha-emitters Radiation Therapy (DaRT)

Arindam Roy, Lior Arazi

Unit of Nuclear Engineering, Faculty of Engineering Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel

14:50 Professional Image X-Ray Technician

Sarit H. Malul Markovich

*Alexandru Ioan Cuza University of Iasi, Iasi, Romania
Assuta MC, Israel*

15:10-15:30 Coffee Break & Exhibition Viewing, Poseidon Hall

15:30-17:30 Session 11 - Physics, Chemistry and Nuclear Materials, Venus Hall

Moderator: Michael Fluss

15:30 Measurements of Fission Product Masses and Isotopic Yields From ^{252}Cf Spontaneous Fission at the FRS Ion Catcher

Yuval Waschitz

15:50 MeV Protons Radiation Damage in Tungsten

Inbal Gavish Segev

16:10 Trap System for Measuring Neutron Capture Cross Section of Short-lived Isotopes

Heinrich Wilsenach

16:30 A Robotic Arm Integrated into a Microstructure Analysis System

Kobi Hadad

16:50 A Novel Alpha Irradiation Degradation Design

Adi Ben-Artzy

17:10 Strontium Immobilization in High-and-low Ph OPC Systems – Controlling Phases and Mechanisms

Matan E. Shiner

15:30-17:10 Session 12 - Medical Physics, Aphrodite Hall

Moderator: Sergio Faerman

15:30 Simulations of Positron Transport using the EGS5 Monte Carlo code and Comparison to the GAMOS Monte Carlo Code Results

Shlomi Caduri^{1,2}, Itzhak Orion¹

¹Department of Nuclear Engineering, Ben-Gurion University of the Negev, Israel

²Consulting Department, Clalit Biomedical Engineering, Israel

15:50 Proton PBS Treatment for Prostate in Seated Position

Dori Benjamin⁴, Shlomi Alani², Michael Marash³, Itzhak Orion⁵, Sion Koren^{1,2}

¹Radiation Oncology, Saare Zedek Medical Center, Jerusalem, Israel, Israel

²Radiation Oncology, Ziv Medical Center, Safed, Israel, Israel

³P-Cure, LTD, Shilat, Israel

⁴Radiation Oncology, Sheba Medical Center, Tel Hashomer, Israel

⁵Nuclear Engineering, Ben Gurion University of the Negev, Beer Sheva, Israel

16:10 Mosfet In-vivo Dosimetry for TBI – Soroka Experience

Nathan Schwob, Yanai Krutman

Radiotherapy, Soroka University Medical Center, Beer Sheva, Israel

16:30 Diffusing Alpha-emitters Radiation Therapy: Results from Preclinical Studies and New Clinical Frontiers

Mirta Dumancic¹, Guy Heger¹, Ishai Luz², Maayan Vatarescu³, Tomer Cooks², Lior Arazi¹

¹Nuclear Engineering Unit, Ben-Gurion University of the Negev, Beer Sheva, Israel

²Shraga Segal Department of Microbiology, Immunology and Genetics, Ben-Gurion University of the Negev, Beer Sheva, Israel

³Preclinical Division, Alpha Tau Medical, Jerusalem, Israel

16:50 Preparation Free X-ray Based Imaging Capsule for Colorectal Cancer Screening

Yoav Kimchy

R&D, Check-Cap Ltd, Isfiya, Other, Israel

17:30-18:00 INS Members General Meeting, Venus Hall

17:30-18:00 ISRP Members General Meeting, Aphrodite Hall

19:30-21:00 Get Together, Poseidon Hall

(For invited speakers and fully paid participants only)

Thursday, June 9, 2022

08:00-09:00 Registration, Registration Desk

09:00-11:00 Plenary 3, Plenary Hall

Moderator: Itzhak Halevy & Gustavo Haquin

09:00 5G: Improved Connections, but at a Cost?

Eric van Rongen

Health Council of the Netherlands and International Commission on Non-Ionizing Radiation Protection (ICNIRP), The Netherlands

ZOOM Presentation

09:30 UNSCEAR Assessment of Radiological Consequences of the Chernobyl (1986) and Fukushima (2011) Accidents for the General Public

Mikhail Balonov¹, Florian Gering², Neale Kelly³, Roy Shore⁴, Borislava Batandjieva-Metcalf⁵

¹*UNSCEAR Secretariat, Consultant, Israel*

²*Federal Office for Radiation Protection, Radiation Protection, Munich, Germany*

³*Nuclear and Radiation Safety Consultant, Radiation Protection, Dunmow, UK*

⁴*Department of Population Health, NYU Grossman School of Medicine, New York, USA*

⁵*UNSCEAR Secretariat, UNSCEAR, Vienna, Austria*

10:00 Approximate Approaches to Neutron Transport Problems and Physical Aspects

Piero Ravetto

Dipartimento Energia, Politecnico di Torino, Torino, Italy

10:30 Uranium Hydrides and Other Systems Seen from the Point of View of Polar Bonding

Ladislav Havela

Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic

11:00-11:20 Coffee Break & Exhibition Viewing, Poseidon Hall

11:20-12:20 Poster Session, Plenary Hall

The full list of posters can be viewed online.

12:20-12:30 Lectures Award for Outstanding Young Researchers, Plenary Hall

12:30-13:30 Lunch Break & Exhibition Viewing, Poseidon Hall

13:30-15:30 Session 13 - Physics, Thermo-Hydraulics and Mechanical Engineering, Venus

Moderator: Piero Ravetto

13:30 Study of Thick Rod Rewetting by a Falling Film

Yosef Aharon

13:50 Experimental Study of Flooding Critical Heat Flux in Vertical Annular Channels with No Flow

Almog Biton

14:10 Transient Flow Boiling Crisis at High Subcooling: An Energy Mechanistic Model Based on Experimental Observations

Raksmey Nop

14:30 Energy Deposition in Coolant of PWR Under Normal Operation and Accident Conditions

Shai Kinast

14:50 Modeling Reactor Noise due to Rod and Thermal Vibrations with Thermal Feedback Using Stochastic Differential Equations

Chen D Dubi

15:10 Fiber Kinematics in Turbulent Boundary Layers

Subhani Shaik

13:30-15:30 Session 14 - Radiation Detection and Measurements, Aphrodite Hall

Moderator: Uzi Gherman

13:30 Human Tissue Substitutes Suitable for In-vivo Measurements and Polyenergetic Clinical CT Photon Spectra Between 13 keV to 120 keV

Henry Spitz

13:50 Studies of Nuclear Decays Using a γ - α/β Coincidence-based Measurement System

Sagi Nissim

14:10 Investigation of the Detection Efficiency of a Liquid Scintillator Cell Read Out by Multiple Wavelength-Shifting Fibers

David Michaeli

14:30 Automatic Acquisition of Directional Gamma Field for Neural Network Training

Yossi Salomon

14:50 Effective Dead Time of Two Non-paralyzable Detector Components in Series

Chen D Dubi

15:10 MTR Fuel in-Plate Power Distribution Measurement using Gamma Spectroscopy

G Gabrieli

15:30-16:00 Coffee Break & Exhibition Viewing, Poseidon Hall