



**INTERNATIONAL CONFERENCE
ON RADIATION APPLICATIONS** | In Physics, Chemistry, Biology, Medical Sciences,
Engineering and Environmental Sciences
September 6-8, 2021 | Virtual online conference
www.rap-conference.org | info@rap-conference.org

CONFERENCE PROGRAMME

Central European time	Monday, September 6
15:00	Official Opening
	Combined Session Chairperson: Aleksandar Jaksic
15:15	Invited talk V. K. Singh, Biomarkers for radiation injury and medical countermeasure efficacy
	Oral Presentations Chairperson: Aleksandar Jaksic
15:45	P. Sharagin, E. Shishkina, E. Tolstykh, A. Volchkova, M. Smith, B. Napier, M. Degteva, Age-specific computational phantoms for bone-seeking $^{89,90}\text{Sr}$ bone marrow dosimetry
16:05	K. Rusiecka, A. Awal, R. Hetzel, J. Kasper, M. Kazemi Kozani, N. Kohlhase, B. Kołodziej, M. Kołodziej, R. Lalik, A. Magiera, M. Rafecas, A. Stahl, V. Urbanevych, M. L. Wong, A. Wrońska, Development of a novel setup for the on-line monitoring of proton therapy - status report of the SiFi-CC project
16:25	M. Zivkovic, D. Krstic, Comparison of FOTELP and MCNP with voxelised geometry in radiotherapy
16:45	A. I. Topuz, M. Kiisk, A. Giammanco, M. Magi, On muon energy group structure based on deflection angle for application in muon scattering tomography: A Monte Carlo study through GEANT4 simulations
17:05	S. Özdemir, J. Öztemur, İ. Yalçın Eniş, H. Sezgin, Investigation of polymer concentration on physical and morphological properties of PLLA based fibrous structures
	Poster Presentations Chairperson: Aleksandar Jaksic
17:25	M. Dobrzyńska, A. Wysocka-Rabin, K. Pasicz, W. Skrzynski, E. Fabiszewska, Using effective detective quantum efficiency (eDQE) to assess and compare imaging systems in digital mammography
17:35	A. Wysocka-Rabin, K. Pasicz, M. Dobrzyńska, W. Skrzynski, E. Fabiszewska, The effect of an anti-scatter grid on performance of digital mammography systems – an eDQE study

Combined Session

Chairperson: Peter Bossew

Oral Presentations

Chairperson: Peter Bossew

- 10:00 C. Maurer, D. Arnold Arias, J. Brioude, P. Mohr, **An atmospheric nuclear explosion source term module for the Lagrangian Transport and Dispersion Model FLEXPART**
- 10:20 J. Kisiel, **Empowering Underground Laboratories Usage Network (EUL) project**
- 10:40 K. Szkliniarz, **Characteristics of natural background radiation at BSUIN and EUL Underground Laboratories**
- 11:00 P. Bossew, P. Kuča, J. Helebrant, **Safecast dose rate monitoring - a Citizen Science project**
- 11:20 I. Krajcar Bronić, D. Borković, **Long-term record of tritium in precipitation – can we deduce influence of solar activity cycles on tritium production?**

11:40 – 12:00

Short break

- 12:00 M. Zheltonozhskaya, V. Zheltonozhsky, D. Myznikov, S. Talavrinova, A. Chernyaev, **Photoactivation method for $^{59,63}\text{Ni}$ content determination in nuclear power plant structural materials**
- 12:20 M. Zheltonozhskaya, V. Zheltonozhsky, T. Tugay, **Study of the Chernobyl hot particles' destruction by soil micromycetes' influence**
- 12:40 P. Bossew, **Open problems in radon research**

Poster Presentations

Chairperson: Peter Bossew

- 13:00 D. Mavrikis, A. Savidou, A. Ioannidou, **Development of techniques for clearance of spent sealed nuclear medicine calibration sources**
- 13:10 G. Mavrokefalou, M. Sotiropoulou, O. Sykioti, E. Florou, G. Kitis, **Dose rate assessment of ^{137}Cs to pelagic fish using an innovative method combining field measurements, CMEMS data and ERICA Assessment Tool**
- 13:20 M. Zivkovic, D. Krstic, D. Nikezic, **Comparison of the vertical distribution of ^{137}Cs in soil after the elapsed time of about a half of the half-life of caesium**
- 13:30 E. Maceika, R. Druteikienė, L. Juodis, A. Pabedinskas, L. Kazakevičiūtė-Jakučiūnienė, R. Barisevičiūtė, Ž. Ežerinskis, J. Šapolaitė, L. Butkus, B. Lukšienė, N. Tarasiuk, **Investigation of the ^{14}C , ^{137}Cs and $^{238,239,240}\text{Pu}$ radionuclide activity concentration distribution in the profiles of lake bottom sediments near Ignalina Nuclear Power Plant**
- 13:40 P. Vacas Arquero, V. M. Expósito Suárez, A. Milena Pérez, F. Piñero García, M. Á. Ferro García, **Determination of Ra-226 and Rn-222 in natural drinking water in the province of Granada (Spain)**
- 13:50 R. R. Moubakou Diahou, G. B. Dallou, H. Bounouira, R. Cherkaoui El Moursli, C. Bouka Biona, **Environmental radioactivity measurement in soils of an abandoned potash deposit at Holle, Republic of Congo**

Oral Session

Chairperson: **Vladimir Jurišić**

- 09:00 E. Zaharieva, H. Kawai, M. Sasatani, K. Kamiya, **Chronic low and moderate dose rate irradiation is as potent as acute exposure in inducing a pro-inflammatory and senescent phenotype in primary human endothelial cells**
- 09:20 E. Zaharieva, M. Sasatani, K. Kamiya, **Effects of dose, dose rate and repair capacity on the formation and resolution of DNA damage foci under conditions of chronic irradiation**
- 09:40 E. Tuncay, **Small cell neuroendocrine carcinoma of the cervix: A case report**
- 10:00 Yu. Kreynina, M. Kaskulova, V. Bozhenko, V. Solodky, **Modulated electrohyperthermia (mEHT) enhances tumor cell apoptosis during radiotherapy in cervical cancer patients**
- 10:20 B. Inanc, **Comparison of tangent-based volumetric modulated arc therapy and 3-D conformal radiotherapy with deep inspiration breath-hold technique for left breast cancer patients**

10:40 – 11:00

Short break

Combined Session

Chairperson: **Ines Krajcar Bronić**

Oral Presentations

Chairperson: **Ines Krajcar Bronić**

- 11:00 M. Dinh, P.-G. Reinhard, E. Suraud, **On the microscopic description of irradiation dynamics**
- 11:20 N. Dray, E. Suraud, C. Dossat, N. Chatry, **RayActive: a new optimized and automated methodology to assess the neutron induced activation**
- 11:40 I. Zinicovscaia, **Application of neutron activation analysis in environmental and material science**
- 12:10 G. K. Toncheva, D. G. Hristov, M. T. Boradjieva, S. Chobanova, K. B. Gavazov, **An extraction-chromogenic system for vanadium(V) based on 4-(2-thiazolylazo)orcinol and benzalkonium chloride**

Poster Presentation

Chairperson: **Ines Krajcar Bronić**

- 12:30 G. Simeonova, B. Todorov, **Modification of ¹⁸F-fluorodesoxy-glucose (¹⁸F-FDG) radiopharmaceutical by oxime conjugation**

12:40 – 13:00

Short break

Oral Session

Chairperson: **Aleksandar Jaksic**

- 13:00 A. Scordo, **VOXES: a new HAPG mosaic crystal based Von Hamos spectrometer for millimetric sources**
- 13:20 S. Niedźwiecki et al., **Multipurpose J-PET detector for medical imaging and tests of discrete symmetries**

13:40	A. Mutale, E. Yilmaz, Frequency dependent electrical characteristics of Al/SiO₂/SiNWs/n-Si MOS capacitors
14:00	A. Kahraman, E. Yilmaz, Gamma radiation effects on the electrical and structural properties of the HfSiO₄ n-MOS
14:20	Conference Closing

VIRTUAL SESSION

Radiobiology

O. Izmetieva, **Study of the consequences of the combined action of prolonged Y-radiation and simulated hypokinesia on the state of erythrocytes**

M. Svetlova, L. Solovjeva, V. Kulikova, K. Nerinovski, A. Yakimov, A. Nikiforov, **The influence of modulation of intracellular NAD biosynthesis on the efficiency of DNA double-strand break repair in cultivated human cells after ionizing radiation exposure**

V. Benković, M. Milić, N. Oršolić, N. Borojević, G. Brozović, A. Horvat Knežević, **Genotoxic effect of combined treatment with anaesthetic sevoflurane and 2 Gy radiation in mice**

M. Milić, A. Horvat Knežević, V. Benković, **Primary DNA damage in brain of mice exposed to anaesthetic isoflurane and ionizing irradiation in dose of 1 or 2 Gy**

S. N. Koryakin, M. V. Troshina, A. N. Solovev, E. V. Koryakina, V. I. Potetnya, A. A. Lychagin, **Reactions of normal and tumor tissues of rats with sarcoma M-1 to carbon ions irradiation**

Radiation Effects

T. Fuciarelli, D. Rollo, **Generational impacts of paternal irradiation in a cricket: Damage, life-history features and hormesis in F1 offspring**

Radiochemistry

M. Strilchuk, I. Mironyuk, H. Vasylieva, I. Maliuk, V. Tryshyn, K. Savka, M. Hryhorenko, **Application of adsorbents in radionuclide separation for radio chronometry purposes**

J. F. Facetti-Masulli, H. D. Colman, **Chemical state of As-76 formed by neutron capture in thioarsenic compounds**

Radiation Physics

T. Torchynska, B. El Filali, G. Polupan, J. L. Ramirez Garcia, L. Shcherbyna, **Morphology, Emission and Crystal structure of ZnO nanocrystal films co-doped with Ga and In elements**

S. Vuchkan, I. Syika, V. Lazur, S. Trofymenko, H. Vasylieva, Y. Kilivnik, O. Sych, M. Hryhorenko, **Comprehensive studies of organic and inorganic adsorbents**

Radiation in Medicine

A. Demianovich, D. Sanin, G. Ruhadze, N. Borysheva, **Dosimetric planning aspects of simultaneous irradiation of two liver metastases with high-dose-rate brachytherapy**

Food Irradiation

A. Malyuga, N. Chulikova, U. Bliznyuk, P. Borshegovskaya, V. Ipatova, A. Chernyaev, D. Yurov, **Effect of ionizing radiation on sprouting and phenology of potatoes infected by fungus *R. Solani***

A. Chernyaev, U. Bliznyuk, P. Borshegovskaya, I. Rodin, V. Avdyukhina, T. Bolotnik, V. Ipatova, O. Shinkarev, D. Yurov, **Research of the effects of electron and X-ray radiation on the volatile content of turkey meat**

Radiation Measurements

R. Pomatsalyuk, D. Titov, V. Titov, V. Uvarov, V. Shevchenko, A. Zakharchenko, **Monitoring of critical parameters of the radiation sterilization process at an industrial electron accelerator**

E. A. Tomarchio, N. Marchese, A. Parlato, **Evaluation of the environmental neutron dose at ground level**

Radiation Protection

I. Girjoaba, V. Ion, **Surveillance of medical exposures performed in Romanian hospitals in 2018**

I. Radulescu, M.-R. Ioan, A. Melintescu, B. Zorila, C. Stelian Tuta, **Passive etched solid state nuclear track detectors for outdoor radon monitoring**

D. C. Barbosa de Souza, M. E. Vieira Cidral, C. Ribeiro Faria, Y. dos Santos Maria, K. E. de Brito Malaquias, C. da Silva, C. Neis Machado, J. dos Santos Muller, **Patient dose estimation using CT-Expo Software in a hospital in south of Brazil**

D. C. Panciera, D. C. Barbosa de Souza, J. Soares Machado, J. C. de Souza Ribeiro, **Estimation of diagnostic reference levels for complete myocardial scintigraphy protocol in the South of Brazil**

I. Shaposhnikova, E. Pryakhin, G. Tryapitsyna, N. Atamanyuk, Yu. Ostroumov, P. Shmelin, A. Akleev, **Drugs for increasing the survival and proliferative activity of hematopoietic stem cells based on rhAFP and rhG-CSF after radiation exposure**

Radioecology

D. Strumińska-Parulska, A. Moniakowska, J. Falandysz, Y. Wang, **Cooking can decrease ^{210}Po and ^{210}Pb amount in *Boletaceae* mushrooms meal**

D. Strumińska-Parulska, A. Moniakowska, A. Zaborska, **Gamma emitting radionuclides in diet supplements of marine origin**

G. Olszewski, A. Moniakowska, A. Zaborska, K. Block, P. Koniecznyński, M. Wesołowski, R. Lysiuk, D. Strumińska-Parulska, **Gamma emitting radionuclides in herbal plants from Ukraine**

G. Olszewski, A. Moniakowska, K. Block, D. Strumińska-Parulska, **Level of extraction efficiency of ^{210}Po and ^{210}Pb in herbal teas**

K. Block, D. Strumińska-Parulska, **^{241}Am sequential separation in marine sediments samples – comparison of the most popular radiochemical methods**

K. Block, D. Strumińska-Parulska, **^{210}Po and ^{210}Pb accumulation and distribution in tropical fruits**

A. Moniakowska, D. Strumińska-Parulska, **The atmospheric fallout impact on ^{210}Po content in herbal plant**

A. Moniakowska, D. Strumińska-Parulska, **^{210}Po in medicinal herbs collected in different regions of Poland**

Ye. Syssoyeva, N. Larionova, **Research into the distribution of radionuclides in forest litter long after the nuclear tests**

Ye. Polivkina, N. Larionova, L. Timonova, T. Ponomaryova, **Uptake of the crystal-bound form of tritium by plants**

Radon and Thoron

F. Loffredo, I. Opoku-Ntim, M. Quarto, **Gini index test on the real dataset of the radon distribution**

M. Quarto, M. D'Emilio, R. Coluzzi, V. Imbrenda, A. Falcone, F. Loffredo, **Radon exhalation rates and radium concentration in soil samples collected in the Industrial area of Tito Scalo (Basilicata Region)**

Radiation Detectors

M. Miliucci, **High precision kaonic atoms X-ray spectroscopy at the DAΦNE collider: the SIDDHARTA-2 experiment**

R. Majgier, M. Tsvirko, A. Mandowski, **Dosimetric properties of potassium sulfate measured by optically stimulated luminescence (OSL)**

I. Grabska, W. Bulski, P. Ulkowski, W. Ślusarczyk-Kacprzyk, P. Kukołowicz, **Analysis of the intermediate checks on the working standards used for routine calibrations of ionizing radiation dosimeters in a ⁶⁰Co gamma ray beam**

Material Science

E. Filippova, **Influence of low-temperature plasma on the transmission coefficient of polycaprolactone films**

R. Chirwa, E. Yilmaz, **Effect of annealing temperature on the charge storage capability of Al/HfO₂/Gd₂O₃/HfO₂/p-Si (100)/Al memory cell**

M. Chimwemwe Zulu, E. Yilmaz, **Effects of thickness and annealing temperature on the charge trapping of Al/Al₂O₃/ZrO₂/SiO₂/p-Si (100)/Al memory cell**

Medical Physics

G. Ucar Alveroglu, I. Kingir Celtik, C. Koksal, H. Bilge Becerir, **Plan evaluation of total body irradiation using volumetric modulated arc therapy (VMAT) and helical tomotherapy**

Nuclear Medicine

G. Tatar, **The role and interpretation of ¹⁸F-FDG PET/CT in RAI therapy of DTC: Case report**

Radiotherapy

S. Akulinichev, V. Denisenko, Yu. Gavrilov, D. Kokoncev, A. Koritsky, L. Kravchuk, V. Martynova, I. Yakovlev, **Possible enhancement of the flash effect with a further increase in the proton dose rate**

S. Akulinichev, V. Denisenko, N. Pojenko, V. Martynova, I. Yakovlev, **Combination of photodynamic and radiation therapy**

Radiation Oncology

C. Koksal, N. Donmez Kesen, N. Dagoglu Sakin, **Impact of intermediate dose calculation module on thoracic esophagus radiotherapy planning**

Neutron and Heavy Ion Radiation

N. Koyuncu, İ. A. Reyhancan, **Experimental determination of α-shape factor and f parameters in ITU Triga Mark II research reactor**

Microwave, Laser, RF and UV Radiations

Ts. Shalamanova, H. Petkova, M. Israel, V. Zaryabova, **Experimental measurements of 5G outdoor massive MIMO antenna located into a shopping center**

M. Israel, M. Ivanova, P. Ivanova, Ts. Shalamanova, H. Petkova, **Patients' and personnel health and safety on using Magnetic Resonance Imaging**

A. Prusov, G. Kolomijtseva, T. Smirnova, **Study of the effect of UV light on the thermal melting of rat liver nuclei in the presence of multiply charged cations via differential scanning calorimetry**

Medical Imaging

R.Y. Shopa, **High-quality iterative TOF MLEM reconstruction for short scans in total-body J-PET**

S. Shubeska Stratrova, S. Jovanovska Mishevskva, D. Spasovski, M. Dimitrovska, M. Toshevskva, **Ultrasound assessment of the adrenal glands magnitude in relation to the visceral body fat distribution in obese women**

S. Shubeska Stratrova, S. Jovanovska Mishevskva, D. Spasovski, **Dual-energy X-ray absorptiometric assessment of android to legs ratio index of abdominal obesity in women**

Medical Devices

D. Spasovski, E. Sandevska, S. Shubeska Stratrova, **Determination of asymptomatic endothelial dysfunction in coronary artery disease in patients with seropositive rheumatoid arthritis with asymmetric dimethylarginine (adma) and myocardial perfusion scintigraphy**

Biomedicine

E. Filippova, A. Zhuravleva, **The implantation of polycaprolactone films into the anterior chamber of the eye**

D. Spasovski, E. Sandevska, S. Shubeska Stratrova, **The utility of dual-energy X-ray absorptiometry (DXA) in the assessment of fracture risk in women with early undifferentiated psoriatic arthropathy sine psoriasis vulgaris with or without joint inflammation**

E. Kuzmina, A. Degtyareva, T. Mushkarina, S. Zatsarenko, **Adaptation mechanisms of restoration of late radiation-induced injuries in cancer patients after combination therapy**

Biochemistry

A. A. Oleshkevich, B. Tahhan, **Breed characteristics of the biochemical parameters of dogs' blood serum**

Biophysics

A. A. Oleshkevich, S. A. Komarova, **Some specific features of small cattle wool**

Bioinformatics

S. Loleska, G. Ristovska, **Public health significance of mobile application "Neurogame" for evaluation of attention, concentration and motor skills**

Other Topics

E. Ioannidou, M. Manousakas, K. Eleftheriadis, J. Paatero, A. Ioannidou, **Heavy metals and ²¹⁰Pb in Helsinki, Finland for the years 1995–2005**

C. Betsou, E. Diapouli, E. Tsakiri, L. Papadopoulou, M. Frontasyeva, K. Eleftheriadis, A. Ioannidou, **Analysis of trace elements concentrations in mosses in Northern Greece based on PMF model**