

Nuclear Physics Group

nuclear physics, low-level spectroscopy, cosmic-ray physics, environmental radioactivity, muon imaging

The main activities are:

1. Investigation of rare nuclear events, double beta decay, cosmic ray physics, muon induced events, Monte-Carlo simulations
2. Public services in radiation protection (gamma spectrometry, alpha, beta, gamma, neutron dosimetry, non-ionizing radiation, radon)
3. Expertise in low-level alpha, beta and gamma spectroscopy

A part of several nuclear applied research and educational networks: EU-TERP–European Training and Education in Radiation Protection Foundation, ALMERA–Analytical Laboratories for the Measurement of Environmental Radioactivity, INSEN–International Nuclear Security Education Network.

Two accredited laboratories according to ISO/IEC 17025: Laboratory for radioactivity and dose measurements and Laboratory for gamma spectrometer and source activity calibration.



COLLABORATIONS

- JRC-different areas of applied nuclear physics;
- ISOLDE-CERN-nuclear structure;
- JINR DUBNA-neutron physics and applied nuclear physics

CONTACT PERSONS

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SELECTED PROJECTS

Title: *Improving Non-Destructive Laboratory Based and In-Situ Measuring Methods to Respond to a Nuclear Security Event*

Type: IAEA Coordinated Research Project

Duration: 2019-2023

Contact person:

Prof. Dr Jovana Nikolov

Title: *Vojvodina and Bács-Kiskun Night Sky as a Novel Touristic Attraction-VoBaNISTA*

Type: Interreg-IPA Cross-border Cooperation Programme Hungary-Serbia

Duration: 2018-2020

Contact person: Prof. Dr Dusan Mrdja

Title: *Imaging techniques with cosmic-ray muons*

Type: Bilateral Scientific and Technological Cooperation Programme Hungary-Serbia

Duration: 2017-2019

Contact person: Dr Kristina Bikit

SELECTED EQUIPMENT

- Three HPGe detectors of 32%, 36% and 100% relative efficiencies in lead passive shields.
- The big low-background iron chamber of a useful volume of 1 m³, with 25 cm thick walls, made out of pre-WWII iron (free of Co60). The chamber accommodates another HPGe detector of 23% relative efficiency
- Alpha, Beta liquid scintillation spectrometer Quantulus 1220.
- MUCA (MUon CAmera) system - muon MWPC-based tracking system developed by WignerRCP of Budapest combined with 4 (50 cm x 50 cm x 5 cm) plastic scintillators detecting in coincidence the secondary radiation created by muons in the object.
- Alpha-ray spectrometer dedicated to the measurement of low levels of radon in air, soil gas and water, RAD7.