



Narodowe Centrum Badań Jądrowych  
National Centre for Nuclear Research  
ŚWIERK

## Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3) Departament Badań Układów Złożonych (DUZ)

Wtorek: **26.11.2024, godz. 11:30**

**Seminarium hybrydowe:** sala 172, bud. 39 (Cyfronet, III piętro)

transmisja online: <https://www.gotomeet.me/NCBJmeetings/uz3-and-phd4gen-seminars>

**Speaker: in person**

**Piotr Kopka**  
NCBJ

### **Scientific Internship at the Institute of Environmental Radioactivity, Fukushima University: Reconstruction of the Source Term from the Fukushima Daiichi Nuclear Power Plant Accident**

#### **Abstract:**

During a three-month scientific internship at the Institute of Environmental Radioactivity (IER), Fukushima University, funded by the MINIATURA project (NCN), research was conducted to reconstruct the source term of the Fukushima Daiichi Nuclear Power Plant (FDNPP) accident using transport models and measurement data. The internship focused on analyzing radionuclide releases into the atmosphere and water, modeling their environmental transport, and comparing measured radionuclide values (e.g., Cs-137, H-3) with simulated results. Enhancements to meteorological data formats were implemented to improve the model's accuracy.

The water cycle of radionuclides in the Niida River basin was also investigated using the WRF-Hydro model. This research provided valuable insights into transport processes and emission sources following the FDNPP accident. The work involved calibrating the model for river discharge and analyzing the separation of overland and groundwater flow components based on precipitation and radionuclide measurements.

Collaboration with IER experts and access to field data facilitated detailed accident scenario reconstructions and environmental impact assessments. This research supports the development of radiological emergency management technologies in Poland, enhancing competencies in nuclear safety. The internship significantly advanced knowledge in radionuclide dispersion modeling and laid a strong foundation for future research on the impacts of nuclear accidents.

Serdecznie zapraszamy  
Tomasz Kwiatkowski, Mariusz Dąbrowski

**Bio:**

**Dr Piotr Kopka** - is a distinguished researcher specializing in nuclear safety and environmental hazards. His doctoral thesis explored the application of Bayesian methodologies to reconstruct stochastic events, with a focus on inverse problems related to hazardous gas and radioactive material releases into the atmosphere. Currently serving as an assistant professor at the National Centre for Nuclear Research in Poland, he has authored around ten scientific publications, earned recognition for his work on atmospheric contamination modeling, and actively advances nuclear safety, emergency preparedness, and environmental analysis.