

Seminarium Szkoły Doktorskiej NCBJ

Thursday, 14 October, 9:00

<https://www.gotomeet.me/NCBJmeetings/phd-seminar>

Speaker:

Patrycja Dyrzcz (Studium Doktoranckie NCBJ)

Title:

Radiological characterization of metallic waste from particle accelerators for disposal after melting

Abstract:

The operation of high-energy particle accelerators like the ones at the European Organization for Nuclear Research (CERN) leads to the unavoidable production of radioactive materials. Activated materials that cannot be reused or recycled need to be disposed of in dedicated disposal facilities for radioactive waste. In this presentation I describe a novel radiological characterization method of low and intermediate level (LL and IL) metallic waste produced at CERN, which will be melted into ingots at an external facility prior to disposal.

I will give an overview of the main challenges and technical solutions associated with the radiological characterization at CERN: in-situ gamma spectrometry of massive items with multiple counting and dose-rate levels above 100 uSv/h at contact, modelling of activity concentrations in the spectrometry analyses, validation of scaling factors for LL and IL waste based on the analytical calculations and Monte Carlo simulations, and self-attenuation in waste packages. In addition, I will identify operational activity limits which take into account the acceptance criteria of the melting facility and of the final repositories, as well as the uncertainties associated with the characterization methodology.