**International Topical Workshop on Fukushima-Daiichi Decommissioning Research 2024 (FDR2024)**

**Abstract: FDR2024-1106**

**Information of Contribution**

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| **Contribution ID** | FDR2024-1106 |
| **Title** | Exploring the Impact of Heterogeneous Cm-244 Distribution on Neutron Flux within Fukushima Daiichi Fuel Debris |
| **Track** | Track 3. Radiation Measurement and Analysis |
| **Author(s)** | Dr. S. Alrawash, et al.(8) |
| **Contact Person** | Dr. S. Alrawash |

**Abstract**

Understanding the distribution of neutron source within fuel debris is crucial for assessing radiation hazards and safety measures in nuclear accident scenarios. In this study, a systematic approach to investigate the effects of the heterogeneous distribution of Cm-244 neutron source on neutron flux distribution within the Fukushima Daiichi Nuclear Power Plant is proposed. Using Geant4 Monte Carlo simulations, various scenarios with different concentrations and spatial distribution of Cm-244 within a cylindrical corium volume were modeled. By varying concentration levels and distribution patterns, different configurations of neutron sources that influence neutron flux distribution were analysed. The research findings provide insights into the spatial variability of neutron flux within fuel debris, enhancing the development of radiation protection strategies and decommissioning efforts. This research contributes to advancing our understanding of nuclear accident consequences and enhancing safety measures in nuclear facilities.

**Keywords**

Fukushima Daiichi, Fuel debris, Cm-244, neutron flux, monte carlo simulations