ID: **O3.2-482** Type: **Oral**

A high-resolution laboratory-based beta-gamma coincidence spectrometry system for radioxenon measurement

Thursday 1 July 2021 16:35 (10 minutes)

GBL15, the UK's noble gas certified Comprehensive Nuclear-Test-Ban Treaty (CTBT) radionuclide laboratory supports the International Monitoring System (IMS) through measurement of environmental radioxenon samples using beta-gamma coincidence spectrometry. GBL15 currently utilises a system comprised of NaI(Tl) photon detectors and plastic scintillator electron-detectors to measure coincident emissions from the four radioxenon isotopes of interest: Xe-133, Xe-135, Xe-131m and Xe-133m. A high-resolution electron-photon coincidence detector system comprising of high-purity germanium (HPGe) detectors and a PIPSBox detector demonstrates improved discrimination between signals and less interference compared to the current system. The minimum detectable activities (MDA) and coincidence detection efficiencies for the radioxenon isotopes of interest have been quantified.

Promotional text

The UK CTBT Radionuclide Laboratory, GBL15, has configured a high-resolution beta-gamma coincidence detection system for laboratory radioxenon measurements. The system is benchmarked against the current certified capability.

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Session Classification: T3.2 - Laboratories Including Transportable and Field Based Facilities

Track Classification: Theme 3. Verification Technologies and Technique Application: T3.2 - Laboratories Including Transportable and Field Based Facilities