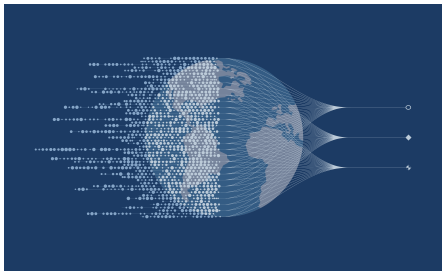

ID: **P3.2-809** Type: **E-poster**

# of a multi-detector system for identification of low-activity CTBT-relevant radionuclides

The International Monitoring System (IMS) of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) includes 80 radionuclide stations performing continuous radionuclide particulate monitoring, supported by a network of 16 radionuclide laboratories which undertake verification and reanalysis of samples. The current analysis technique employed across the IMS uses high-resolution gamma spectroscopy to identify and quantify which radionuclides are present. Ongoing efforts to increase the sensitivity of measurements and reduce detection limits have seen the development of more advanced techniques. Multi-detector systems can be utilised to vastly reduce the signal-to-noise ratio of measurements by only considering counts that have a coincident hit in another detector. When applied to low-activity samples this technique can be used to identify and quantify radionuclides that would otherwise not be possible to detect with conventional single detector systems, in addition to greatly reducing the minimum detectable activity. This poster presents work being conducted at the UK's radionuclide laboratory, GBL15, on a multi-detector system for the application of identifying low-activity CTBT-relevant radionuclides.

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Session Classification: P3.2 Radionuclide Technologies and Applications

Track Classification: Theme 3. Monitoring and On-Site Inspection Technologies and Techniques: T3.2 Radionuclide Technologies and Applications