ID: Type: **Poster**

new analysis method for beta-gamma radioxenon spectra, including improved calculation of decision limits

A new method for analysis of beta-gamma coincidence radioxenon spectra has been developed. The problem is formulated as a linear equation system, solved by matrix inversion. This makes the analysis procedure simpler compared to the NCC method, including the calculation of covariances. Furthermore, only 6 instead of 10 regions of interest are needed. In addition, the estimation of the decision limits is modified compared to the NCC-method using a Bayesian correction to adjust for the fact that the estimated background can be negative, which in turn can lead to undefined decision limits. This modification allows the decision limits to always be defined, and they also come closer to the assumed confidence level, which reduces the number of false detections, in particular for the metastable isotopes 131mXe and 133mXe, as shown by Monte-Carlo simulations.

Primary author: RINGBOM, Anders (Swedish Defence Research Agency (FOI))

Presenter: RINGBOM, Anders (Swedish Defence Research Agency (FOI))

Track Classification: Theme 3. Verification Technologies and Technique Application