



Contribution ID: 31

Type: **Talk**

X-ray K-edge imaging with photon counting detectors and polychromatic sources

Wednesday, 3 October 2018 12:30 (30 minutes)

X-ray K-edge Subtraction (KES) Imaging is a procedure based on the acquisition of two images at different energies, one below and one above the K-edge of an element contained in a detail to detect. The technique allows highlighting the detail suppressing the background.

Most recent Photon Counting X-ray Detectors (PCXD) have advanced spectral features, including multiple thresholds and multiple counters, allowing performing “color” imaging even when using polychromatic sources. With this kind of devices it is possible to perform the XKSI employing common X-ray tubes and collecting the two images in a single shot. This eliminates the risk of misregistration due to motion of the sample making them appealing for medical applications.

On the other hand, the quality of the KES imaging, performed using PCXD, depends on the performance of the detector and it is influenced by the choice of various additional parameters including the shape of the radiation spectrum, the thresholds etc.

In this speech, I will point out the effect of the different parameters on the global quality of the KES imaging. I will show some applications of this technique describing in particular the experimental results obtained by KEST (K-Edge Spectral Tomography), a project supported by the Istituto Nazionale di Fisica Nucleare (INFN), that employ a Pixirad-PIXIE-III “color” imaging detector.

Summary

Primary author: DELOGU, Pasquale (SI)

Presenter: DELOGU, Pasquale (SI)

Session Classification: Imaging