A Portable Gamma Imaging System dedicated to the Detection and the Direct Visualization of Hot Spots (mainly \(^{60}\)Co) in Nuclear Power Plants


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FRAMEWORK

In a nuclear power plant (NPP), the localization of radioactive hot spots is a major issue, as they are responsible for a significant part of the doses received by the workers, especially during maintenance operations. They are mainly due to the presence in the water of activated corrosion products, \(^{60}\)Co / \(^{65}\)Co, as well as some other radionuclides, and hence are encountered in pipes.

THE GAMMA CAMERA GAMPIX

GAMPIX is based on three main components: the Timepix pixelated chip, hybridized to a 1 mm thick CdTe substrate, a coded mask used as a multi pinhole collimator and a USB module to connect the control computer to the gamma camera.

RESULTS

Two modes available for background management:
- 1 shot (measurement time = 10 – 100 sec) + average background subtraction
- 2 shots – 1 in mask position + 1 in anti-mask position (measurement time 2 × 1 shot)

OTHER POSSIBLE USES

- Security in gammagraphy
- Waste management
- ...

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