

Development of X-ray Monochromatization Devices for Per-Pixel Energy Calibration of Semiconductor Detectors

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Semiconductor pixelated detectors are expanding their applications in high-energy physics, medicine and environmental radiation monitoring. This type of detector allows for the registration of every single photon at a sufficiently high flux. To achieve a good energy resolution of the detector, per-pixel procedure of energy calibration is required, and monochromatic X-ray sources are needed for that. This study aims to develop devices for X-ray monochromatization and to investigate the capability of these devices to provide the energy calibration for semiconductor pixelated detectors.

This report will present the structure of the developed devices as well as the supporting software. In addition, measurements of the output field of energy and photon flux are provided to demonstrate the potential of the developed devices to perform the per-pixel energy calibration procedure.

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