

Quest for an optimal high energy resolution X-ray spectrometer

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X-ray source based high energy resolution spectrometers have been showing radical progression recently both at laboratory scale and at large facilities. Despite of the quick spread of these X-ray spectrometers, building up an instrument presents still a considerable challenge for each research group. While the technical details of almost all existing unique spectrometers are published, it is very difficult to compare the performance of the different components as the final result may depend on many factors, and comprehensive studies are still missing.

The present work offers direct comparisons for three key elements of a high energy resolution X-ray spectrometer using affordable state of the art components as building blocks. Firstly, two types of popular crystal analyzers are contrasted, then two detectors with different working principle and intended use are confronted, and finally two component arrangements will be discussed and compared.