Multi-element Germanium Detectors for Synchrotron Applications

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We have developed a series of monolithic multi-element germanium detectors, based on sensor arrays produced by the Forschungzentrum Julich, and on Application-specific integrated circuits (ASICs) developed at Brookhaven. Devices have been made with element counts ranging from 64 to 384. These detectors are being used at NSLS-II and APS for a range of diffraction experiments, both monochromatic and energy-dispersive. Compact and powerful readouts systems have been developed, based on the new generation of FPGA system-on-chip devices, which provide closely coupled multi-core processors embedded in large gate arrays.

We will discuss the technical details of the systems, and present some of the results from them.