

## **560 mm<sup>2</sup> SDD ARRAY**

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We will present first measurements with a novel 7-channel silicon drift detector (SDD) array. This system has been developed for XRF synchrotron applications requiring large detection areas.

The system is cooled with integrated Peltier coolers to chip temperatures below -50°C. The hot side of the Peltiers is cooled with a closed water cooling system. Measurements with other cooling concepts such as heatpipe and secondary Peltier cooling will be presented.

The single SDD elements have an area of 115 mm<sup>2</sup> collimated to 80 mm<sup>2</sup>. The substrate thickness is 450 µm. The 7 SDD elements are independent and can be exchanged individually. A new detector concept has been developed to allow for a very slim header design. The overall area of one element is only limited by the SDD chip area and the 7 elements can be placed close together giving an excellent fill factor.

We have demonstrated FWHM @ 5.9 keV of <127 eV for the single elements. The Peak to Background values are >10,000.

The whole system is vacuum sealed with one large area 25 µm Beryllium foil as x-ray entrance window. The 25 µm foil is supported by a Beryllium grid to avoid any line contamination in the spectrum.

The outer diameter of the complete array detector finger will be as low as 50 mm allowing for a very close distance to the sample.

The system will include the complete readout electronics (power supplies, preamplifiers, Peltier supplies). The signal processing is done by two XIA 4-channel DPPs.