

GOTTHARD: a charge integrating silicon strip detector for XFEL and Synchrotron applications

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The SLS Detector group at PSI has developed GOTTHARD, a charge integrating silicon strip detector which, thanks to the automatic gain switching feature, can provide at the same time single photon resolution and a dynamic range as big as 10000 12 keV photons, with a noise well below the photon statistics limit over the full range. The detector module is made of ten readout ASIC (Application Specific Integrated Circuit) wire bonded to a silicon sensor with a 64mmx8mm sensitive area for a total of 1280 channels at 50 um pitch. A complete readout chain, from the high speed digital converters to the Gigabit link for the data download, is also integrated on the board. Burst frame rates up to 1MHz (60kHz in continuous streaming) can be achieved. The detector design will be presented together with the results from the commissioning phase. Operation of the device at both XFELs and Synchrotron sources will be discussed.

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