

# Micron Resolution Imaging with MÖNCH

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MÖNCH is a charge integrating readout ASIC (Application Specific Integrated Circuit) prototype for 25 micron pixel pitch silicon sensors developed at PSI, which allows new imaging applications in the field of micron resolution and spectral imaging. It is a fully functional, small scale prototype of 4x4mm<sup>2</sup>, containing an array of 160x160 pixels with a low power consumption of 3-5  $\mu$ W/pixel. The small pixel size of this system leads to charge sharing between pixels, which can be used to gain additional information about photon absorption position and photon energy. To capture these information high frame rates and therefore high data rates are needed. We show the design of the read out system, which is capable of online pre-compression of the data to allow continuous storage.

We present results of experiments with a comparable strip detector (adapted GOTTHARD system) showing that with the aid of single photon interpolation algorithms micron resolution is achievable. We will also show the energy discrimination capabilities of such a system.

Additionally, we present measurements with a resolution phantom and the MÖNCH pixel detector to further investigate the imaging capabilities concerning total exposure time.

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