Title:
Towards high-resolution X-ray Spectral Imaging

Abstract:
In the ever-evolving landscape of X-ray detection technology, we explore a proposal for an hybrid pixel sensor for both high resolution X-ray imaging and spectroscopy. The proposed system is based on the analog processing of individual photons at high speed in an event-driven fashion. This approach reveals the wealth of information encapsulating the photon detection, i.e. its position, energy and arrival time, all at one time. Our ultimate objective is to attain energy resolutions at the forefront of X-ray pixel detectors, all while harnessing the exceptional imaging capabilities afforded by advanced readout ASIC granularity. Steps towards the achievement of these goals will be presented.