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A high throughput, multi -channel photon counting detector with picosecond timing

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High throughput photon counting with high time resolution is a niche application area where vacuum tube technologies can still outperform solid state devices. Applications in the life sciences will benefit greatly from performance enhancements both in event timing accuracy and detector throughput. The goal of the HiContent project is to develop a detector system specifically designed for optical proteomics, capable of high content (multi-parametric) analysis at high throughput. The detector combines multi-channel, high time resolution photon counting in a single miniaturized detector system with integrated multi-channel ASIC electronics with up to 1024 parallel counting channels and 20 picosecond time resolution. We describe the detector design and discuss the current status of the HiContent project and present the results from a 64 channel prototype system.

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