Photonscore.

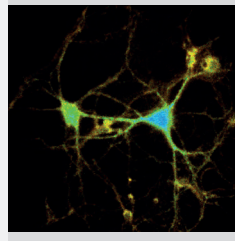
PHOTON COUNTING MADE EASY

LINCam is the quantum sensor solution for scanning-free time correlated **single photon counting**. The camera resolves x and y positions of individual photons as precise as a CCD with **1000 × 1000 pixels**, together with **40 ps** accuracy timing. Being paired with a pulsed light source LINCam turns any conventional fluorescence microscope into a powerful lifetime measuring instrument. LINCam is just a camera. Handling is as easy as a megapixel CCD camera but extended with high precision timing dimension.

Applications

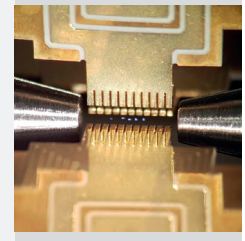
Metabolic & NADH Imaging

Cellular energy production in form of ATP depends on glycolysis and the electron transport chain within mitochondria. With LINCam you can visualize metabolic changes and dysfunctions under various conditions in all cell types by label-free monitoring of the autofluorescence of NAD(P)H and FAD. Even in neurons, it is possible to study the relation between energy metabolism and tiny changes in the electrical activity after stimulation.



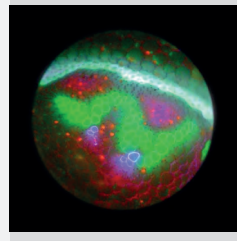
Quantum Optics

To investigate the photon statistics of multi-emitter single-photon sources, a spatially and temporally resolving detector of high sensitivity and accuracy is needed. With synchronized LINCams, it is possible to record a coincident photon event stream induced by trapped ions with coincidence windows of 40ps. From this recorded data, all the properties of the photon statistics of the ion crystal, e.g. simultaneous presence of bunching and antibunching, can be evaluated.



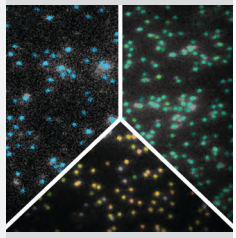
Widefield FLIM

In widefield fluorescence microscopy the whole field of view is illuminated simultaneously, in contrast to confocal imaging. Widefield FLIM enables fast detection of fluorophores under low light conditions with high temporal resolution. Using LINCam you can analyse complex fluorescence decays and generate high quality FLIM images and FLIM movies of living samples.



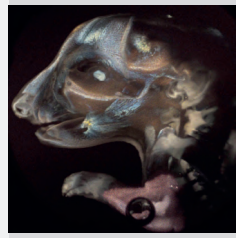
Single Molecule Imaging

Different types of single molecules are often spectrally unresolvable. However, they can be characterized and separated by their corresponding fluorescence lifetimes. With LINCam, it is possible to create a contrast between different single molecule emitters with an accuracy of <200 ps in high-resolution widefield lifetime images.

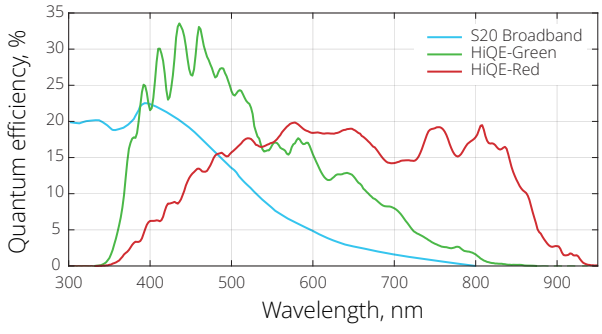


3D Lightsheet FLIM

To overcome the poor axial resolution of widefield microscopy several methods can be combined with LINCam to create confocality. Here we show 3D FLIM images acquired with optical sectioning by lightsheet illumination. Hundreds of individually recorded focal planes of the specimen can be merged into a vivid 3D FLIM visualization.



Technical Data



Detector	LINCam
Active area diameter, mm	17
Positional resolution, pixels	1000 × 1000
Temporal resolution, ps FWHM	≤ 40
Microscope mount	C-mount
Housing dimentions, mm	145 × 78 × 50
Weight, g	500
Cooling	Low noise Air or Liquid

Acquisition system	
Maximal count rate, MHz	1
Dead time, ns	400
Timing	
Method	TAC + ADC
Minimum bin width, ps	≤ 1,4
Electrical resolution, ps	6
Number of bins	4096
Reference input	Positive or negative NIM
Time tagging resolution, ns	10
Computer interface	USB 3.0 / Ethernet
Operating system	Windows 7 / 10 / 11 (64 Bit)