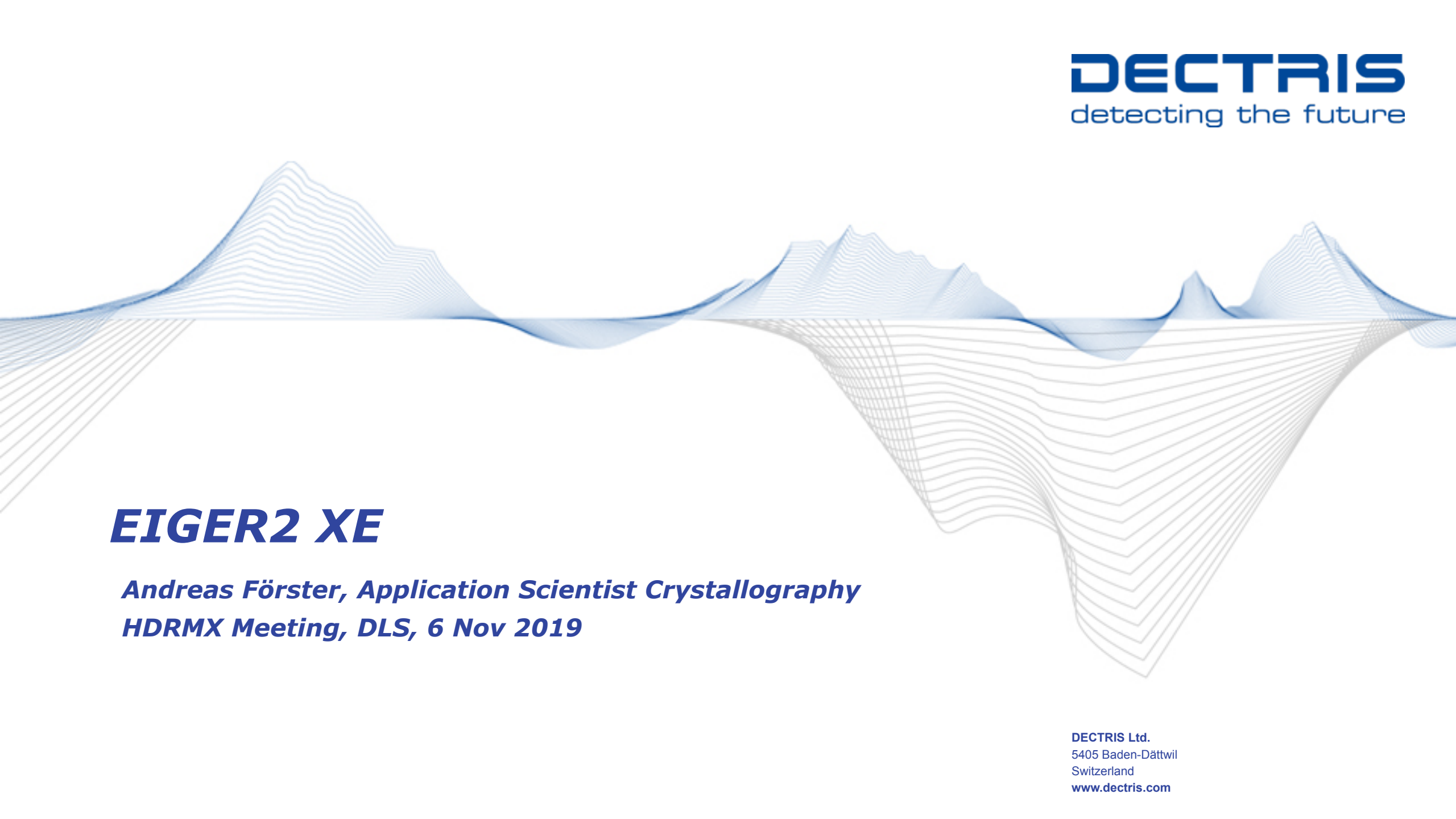
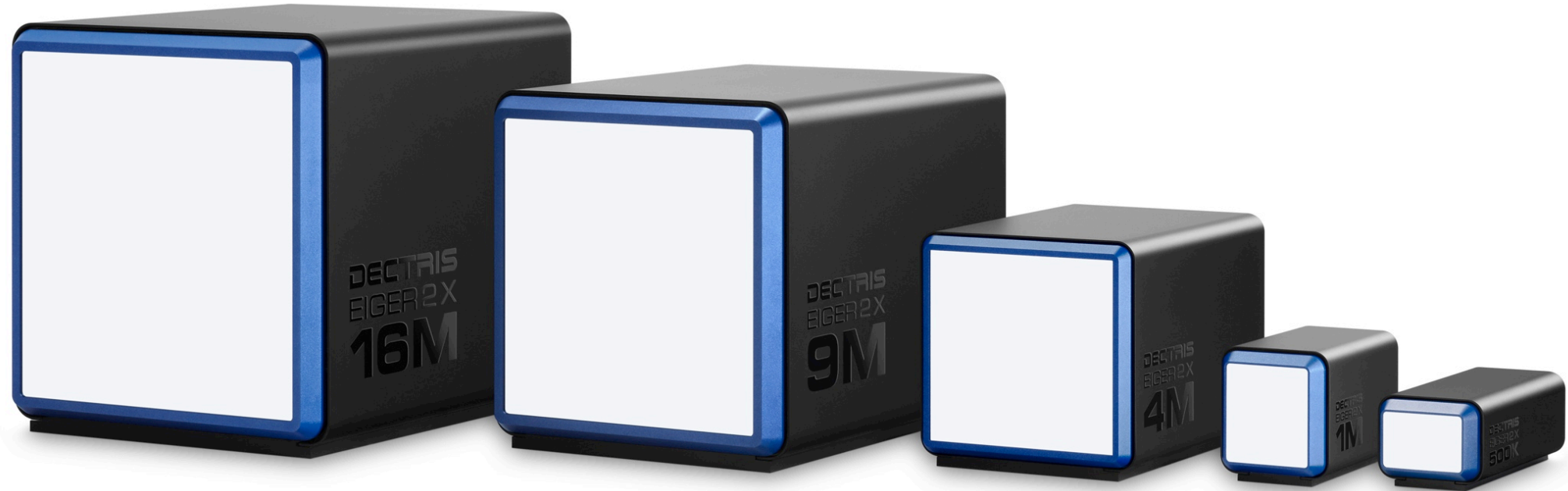




EIGER2 XE

***Andreas Förster, Application Scientist Crystallography
HDRMX Meeting, DLS, 6 Nov 2019***

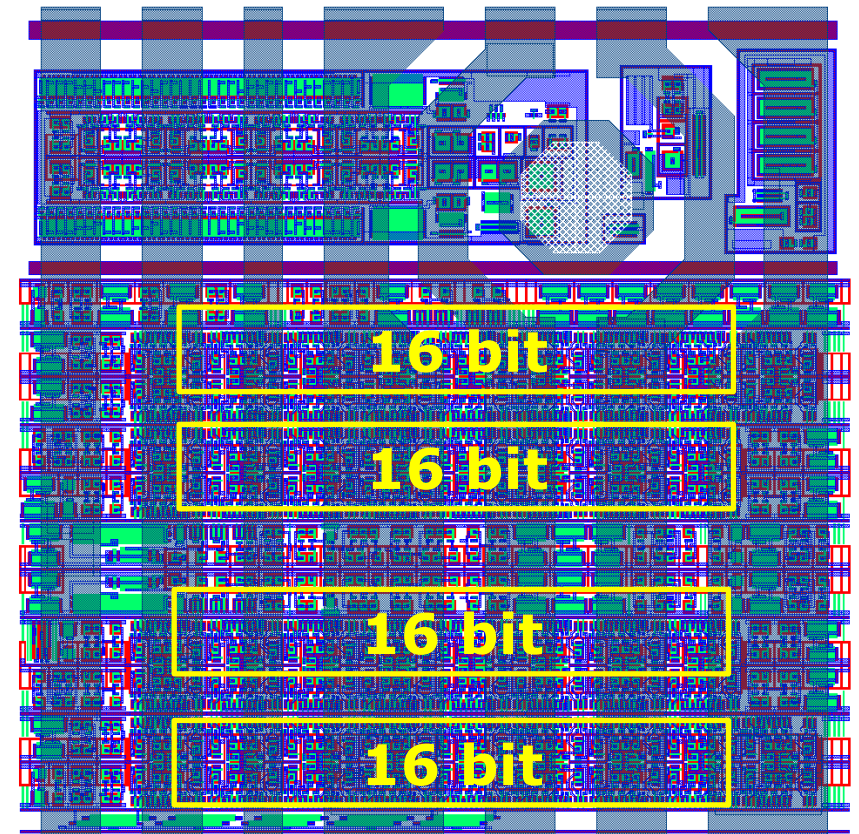
EIGER2 X detector series



EIGER2 ASIC

Main characteristics

- Compatible to EIGER ASIC
- Matrix of 256 x 256 = 65536 pixels
- Pixel size 75 x 75 μm^2
- Counter depth 2 x 16 bits
- Operation True read/write
- Number of thresholds per pixel 2
- Gateable YES
- Instant Retrigger Technology YES
- Count rate per pixel $10^7 / \text{s}$



With EIGER2 you can do more

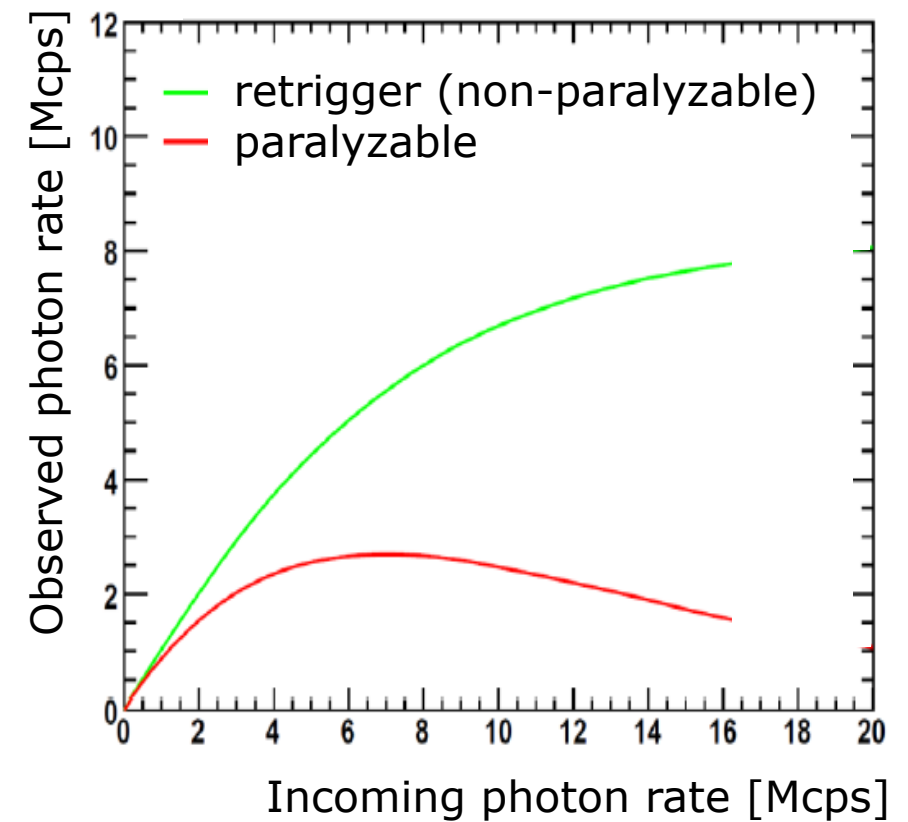
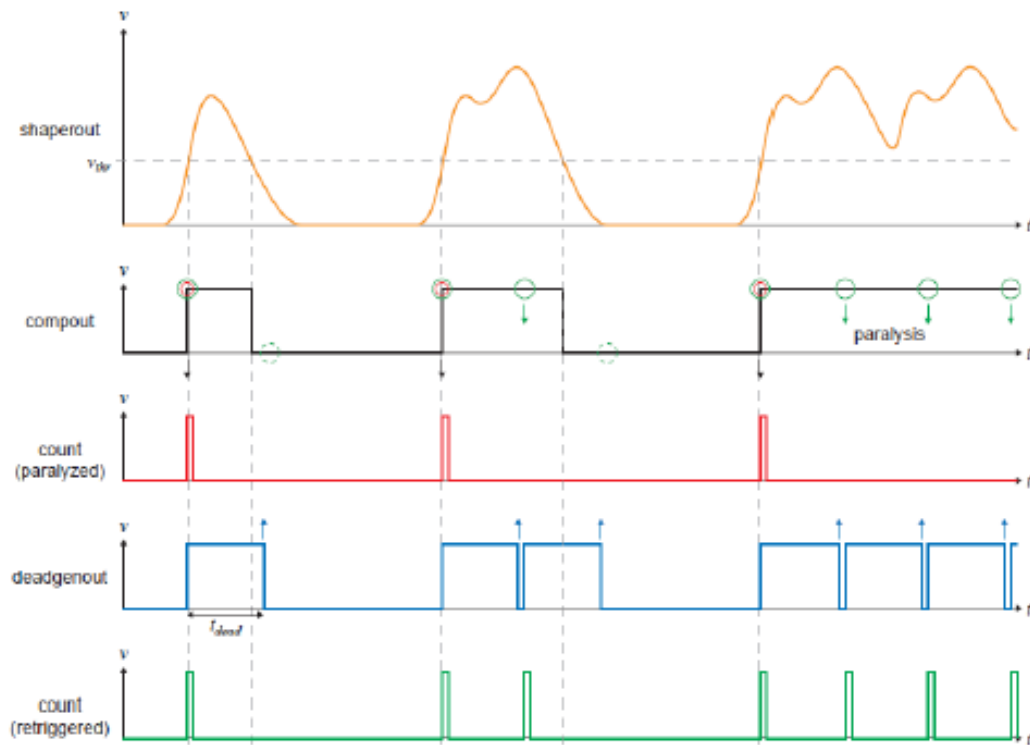
Main advantages

- *Count rate capability 10^7 counts/s/pixel through non-paralyzable Hybrid Photon Counting (HPC) technology.*
- *Suppression of fluorescence and high-energy photons with two energy discriminating thresholds.*
- *Dead time free data collection with dual 16-bit counters.*
- *Pump & probe capability through gateable detection.*

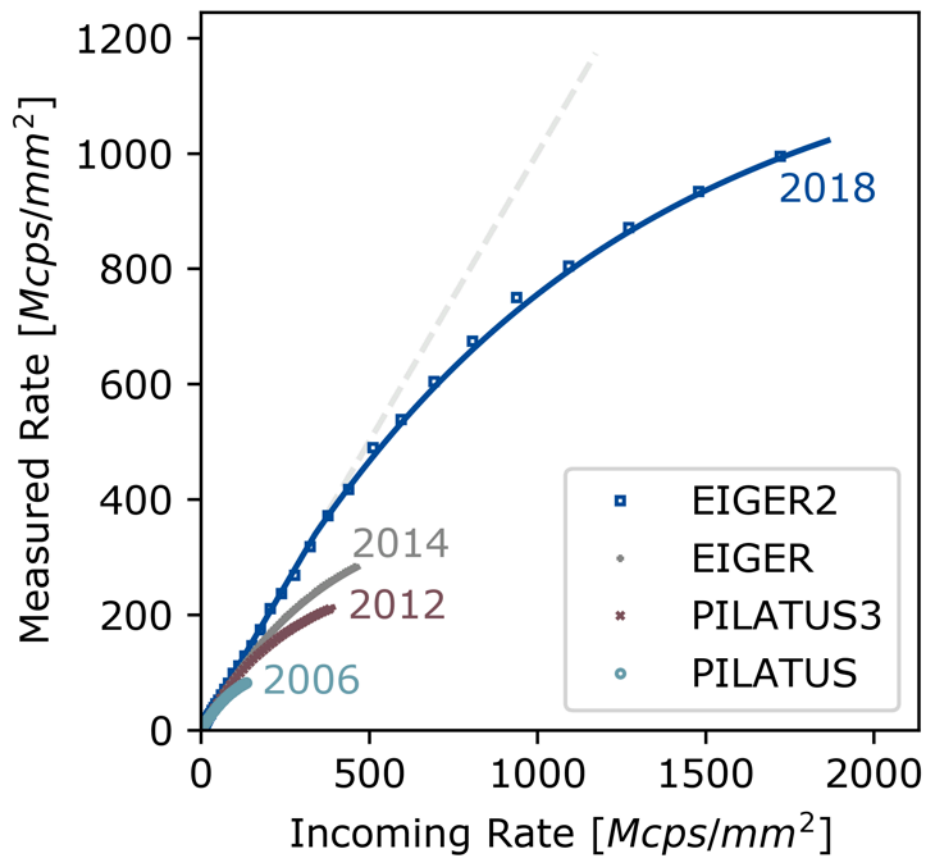


Instant Retrigger for EIGER2

Photon counting without ambiguity



Count Rate Comparison



EIGER2 X count rate capability

- 2 billion counts per second and mm².
- 25-fold increase since PILATUS.

First systems are operational

Systems installed at

- Swiss Light Source – EIGER2 X 16M*
- Diamond Light Source – 2x EIGER2 X 16M, EIGER2 X 4M*
- Australian Synchrotron – EIGER2 X 9M*

"The dataset quality is excellent according to all indicators and such quality would be impossible to achieve with older generation detectors."

Filip Leonarski, PSI, Switzerland



Is EIGER2 better than EIGER?

The external dimensions of EIGER2 systems are unchanged from EIGER

	EIGER X 16M	EIGER2 X 16M
Pixel size [μm^2]	75 x 75	75 x 75
Maximum count rate [photons/s/pixel]	2.4×10^6	10^7
Point spread function	1 pixel	1 pixel
Readout time	3 μs dead time	two counters – no dead time
Energy discriminating thresholds	1	2
Maximum frame rate [Hz]	133	130

Is EIGER2 better than EIGER?

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EIGER2 XE

Large EIGER2 X detectors with up to 550 Hz

FAST
FASTER
EIGER2 XE



Specifications

	EIGER2 XE 9M	EIGER2 XE 16M
Pixel size [μm^2]	75 x 75	75 x 75
Maximum count rate [photons/s/mm ²]	10^7	10^7
Maximum frame rate [Hz]	550	550* , 400

* For up to 10,000 images

Thank you for your attention !

