Development for SACLA and for SPring-8 upgrade

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Detectors

Multi-port CCDs

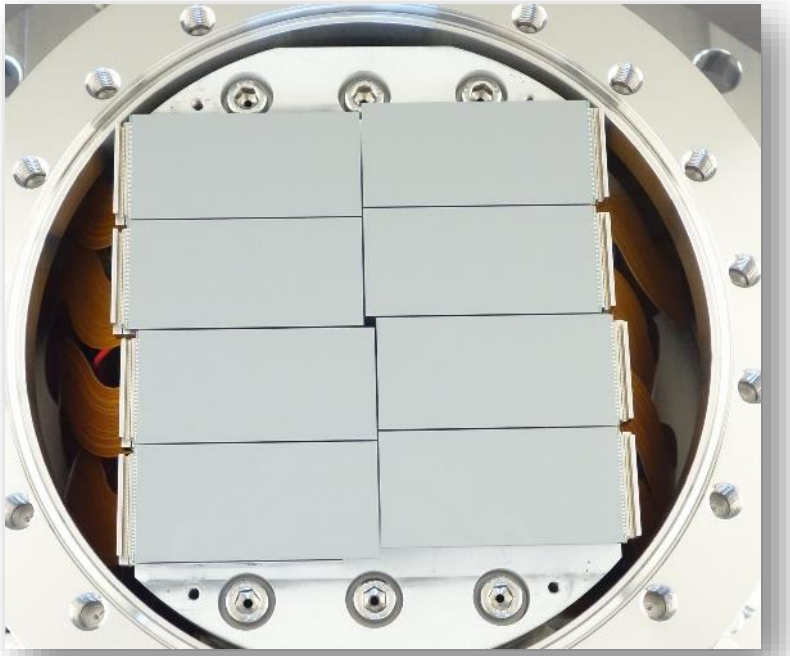
- Development FY2007-2017
- Deployed since 2011
- SACLA

SOPHIAS

CITIUS

MPCCD

Since 2011.



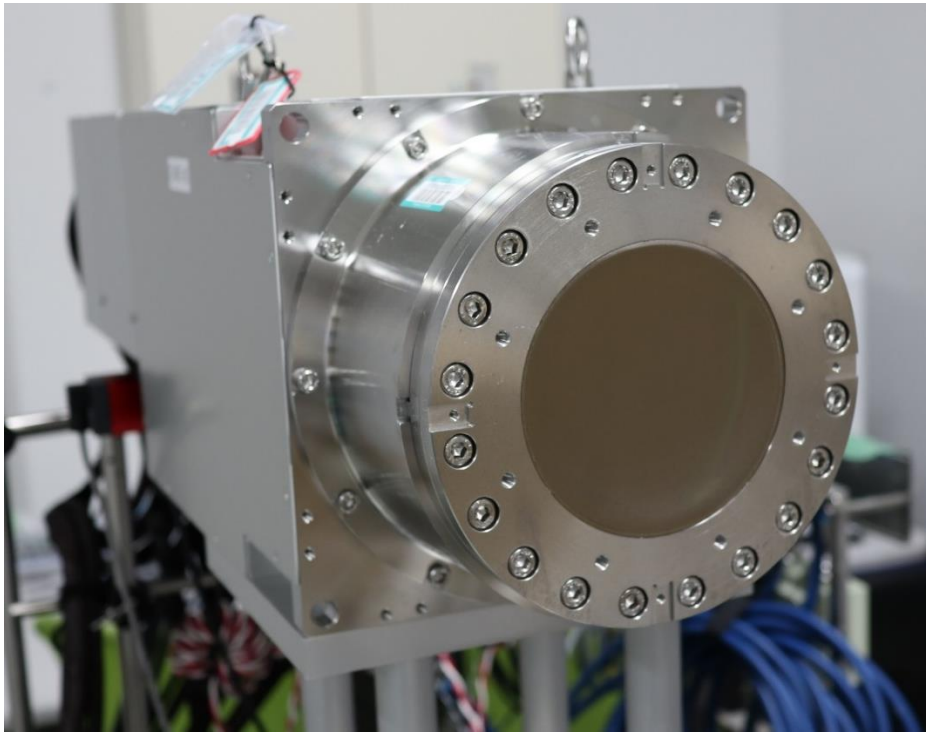
Specifications

- Pixel Size: 50 μm
- Pixel Number: 512 x 1024 (0.5 M)
- Bit Depth: effective 19 bits
- Dead Area: Top 300 μm, Sides 150 μm
- Pixels with high X-ray Radiation hardness
  - 3.2×10^{14} photons/mm^2@12 keV
  - ~1 MGy
- Frame rate: 60 frame/s

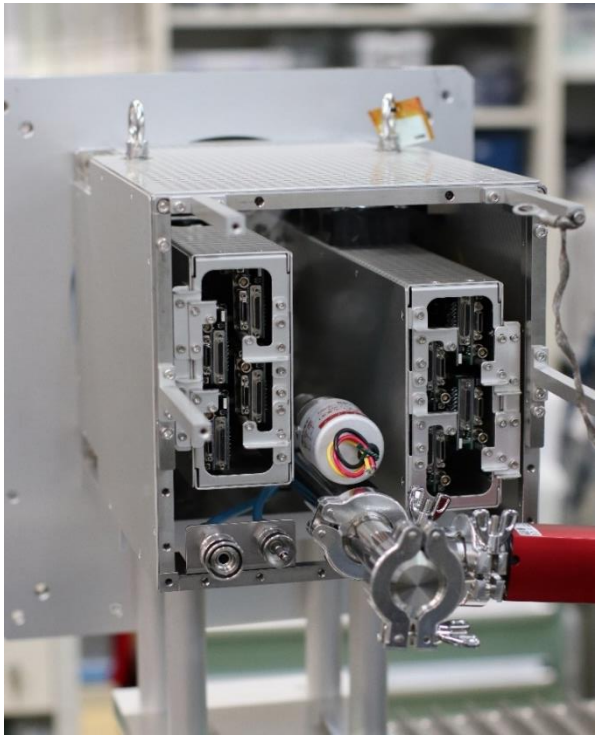
Performance at 30 frame/s

- Peak Signal: 4-5 Me-
- Noise: < 300 e-rms

Compact Camera System



8 Sensor Array



- Weight & Footprint reduced significantly.
- 29 W/sensor (27 nW/conv)
  c.f.) 34 nW/conv. for LSST

Retrieved from presentation of P. O'Connor (BNL) in TWEPP 2014.

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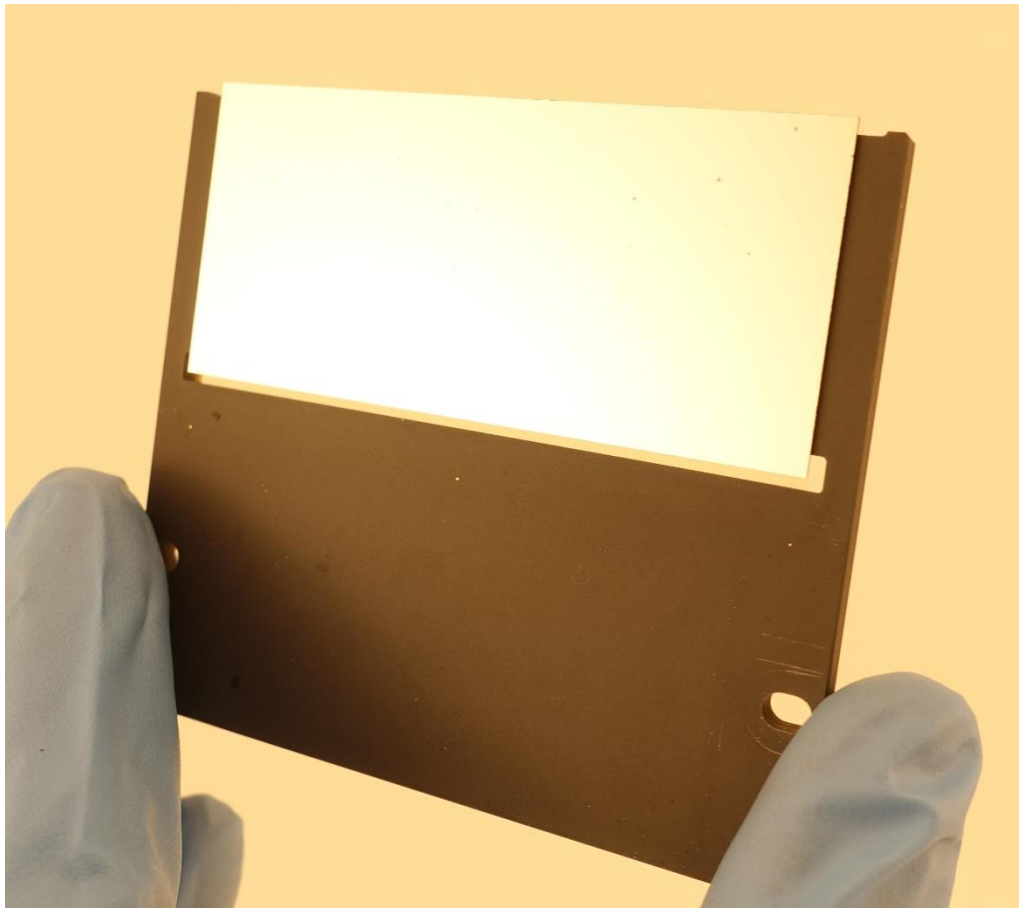
SOPHIAS

- Development FY2007-2017...
- Deployed since 2015
- SACLA, Photon Factory, SPring-8, Laboratory, Heavy Ion therapy

CITIUS

SOPHIAS

T. Kudo, K. Ozaki, N. Teranishi, K. Kobayashi, Y. Matsuda, T. Hatsui

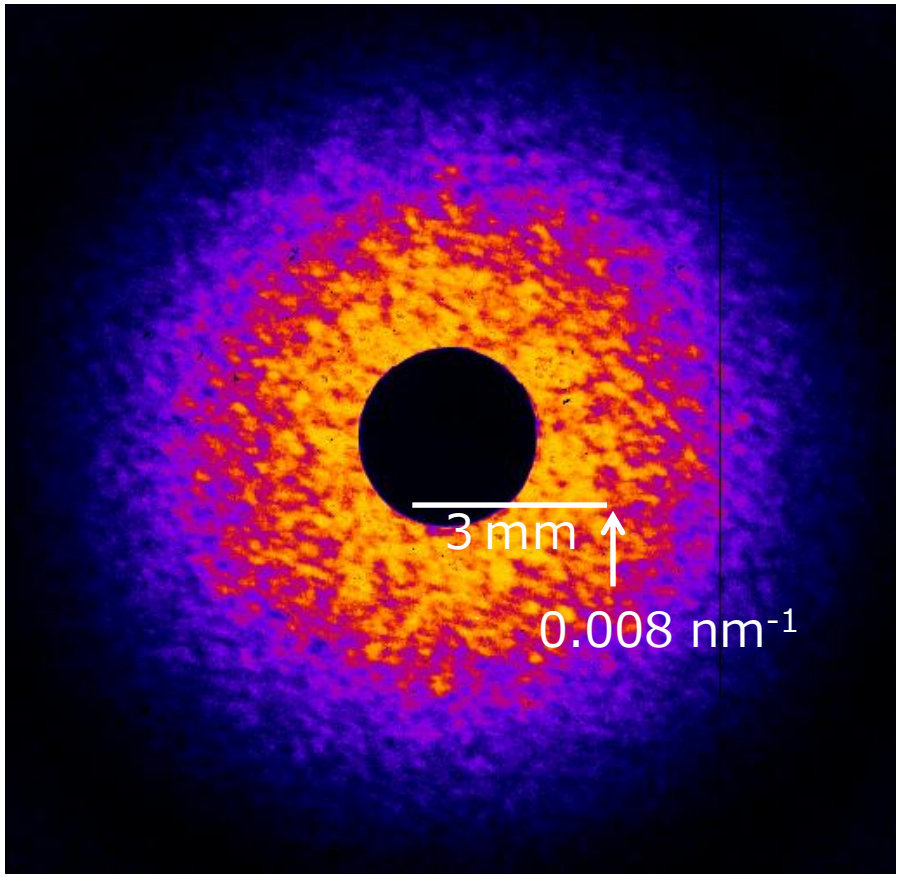


Integrating-type detector
Technology: SOI pixel
Sensor: 500 μm thick
Pixel: 30 μm□
Single photon detection: > 5.5 keV
Peak: 10 000 photons/pix./frame
Eff. Energy resolution 1 keVrms
Imaging Area: 65mm × 27mm
Pixel Number: 1.9 Mpixels
Frame rate: 60fps

Deployment since 2015-

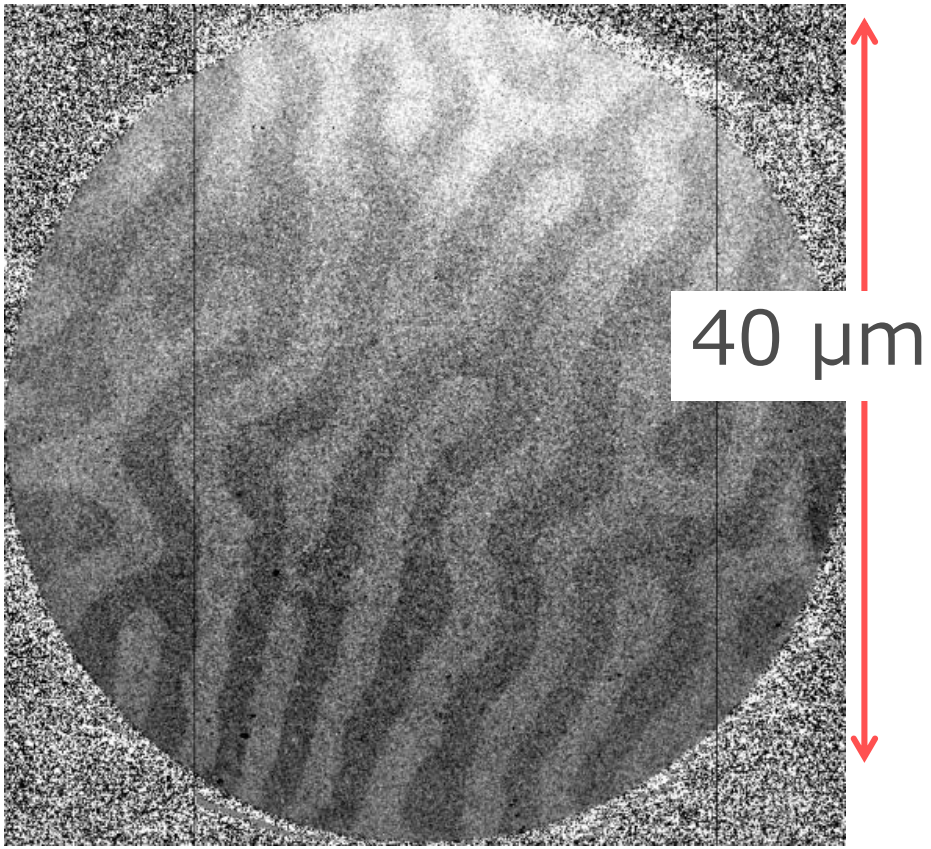
XPCS for industry

200 nm Si particle in PPG, 8 keV



trans. XMCD

GdFeCo 7.247keV



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SOPHIAS	• Development FY2007-2017... • Deployed since 2015 • SACLA, Photon Factory, SPring-8, Laboratory, Heavy Ion therapy
CITIUS 17 kfps	• Feasibility study 2013-2015 • Development 2015-2020 • Experiments with in-kind users

Thank you