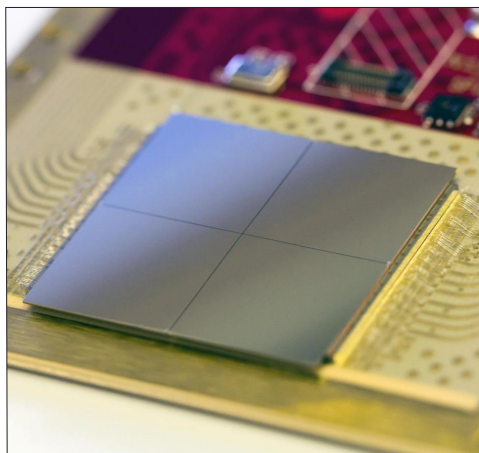


# TIMEPIX4



Timepix4 is a programmable general purpose hybrid pixel detector readout ASIC, with a larger chip area and improved time stamp precision and hit rate capability in comparison to its predecessor, Timepix3. The Timepix4 ASIC consists of a matrix of 448 x 512 pixels with a pixel pitch of 55 $\mu$ m. By utilising Through-Silicon-Via (TSV) technology, the ASIC has been designed to be 4-side buttable, permitting almost seamless tiling on all 4 sides. The detector can be applied to a wide range of applications including X-ray imaging, particle tracking and material analysis.

One can choose between several data acquisition modes depending on the application requirement. In data driven mode, the arrival time (Time-of-Arrival – ToA) and charge deposit information (Time-over-Threshold – ToT), as well as coordinates of the active pixel, are provided for each hit. For imaging applications and for calibration, the ASIC can be operated in frame-based mode in either continuous read/write or sequential read/write mode.

## AREA OF EXPERTISE

Electronics

## TECHNOLOGY READINESS LEVEL

Available for R&D licenses

## CONTACT

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## FEATURES

- Pixel size 55 $\mu$ m x 55 $\mu$ m.
- 512 x 448 pixels.
- Readout dead-time-free modes.
- Data-driven or frame-based (sequential or continuous read/write) readout.
- Large sensitive area (6.93 cm<sup>2</sup>) with almost no dead area (<0.5%).
- Larger chip area and improved time stamp precision and hit rate capability compared to Timepix3.
- 4-side buttable: 3x 'hidden' periphery TSV/IO.

## APPLICATIONS

- X-ray and neutron imaging
- Particle track reconstruction
- Electron detectors
- Material analysis
- Synchrotrons

