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Applications of vertexing detectors

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Detector concepts originally developed for vertex applications have been further developed to address the needs of different applications outside high-energy physics. A typical example is the MEDIPIX series of detectors. The original concept was based on the Omega3 readout chip. Over the years the technology has been further developed into the MEDIPXI2 chip with energy windowing and its successor MEDIPIX3 adding charge summing to avoid spectral distortion due to charge sharing. The TIMEPIX chip introduced time-over-threshold (TOT) and time-of-arrival (TOA) concepts to identify incoming photons or particles. With its successor TIMEPIX3 TOT and TOA can be recorded simultaneously. TIMEPIX3 also uses event driven readout to increase the maximum event rate.
The different MEDIPIX/TIMEPIX chips have found applications as materials research, medical imaging, dosimetry and astronomy. This presentation will cover the characteristics of the devices and their use in different applications.

Author: Prof. FROJDH, Christer (Mid Sweden University)

Presenter: Prof. FROJDH, Christer (Mid Sweden University)

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