**MS45-2-1 Photon-counting detectors in the space domain and the time domain**
**#MS45-2-1**

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**Abstract**
Conventionally, photon-counting detectors have operated in the time domain, in which X-rays are counted one-by-one as they hit the detector. However, this type of serial detection has limitations. It has been proposed that photon counting in the space domain should have significant advantages. In this approach the detector produces a fast 'movie' of the evolving X-ray diffraction pattern and then a processor looks for individual events in each frame of the movie. We describe the advantages of space-domain versus time-domain photon counting and explain how space-domain photon counting can be implemented using the latest generation of real-time processors.

PHOTON III X-ray detector