Contribution ID: **44** Type: **Oral Contribution**

Development of large-area reverse-type APD arrays for high-resolution medical imaging

Thursday 4 September 2008 16:50 (20 minutes)

Avalanche photodiode (APD) offers an advantage in weak scintillation detection, fast time response, as well as magnetic field insensitivity. We have developed large-area APD arrays with Hamamatsu phonics K.K, specifically designed for high resolution positron emission tomography (PET). Each device has a monolithic 16x16 (or 8x8) pixels structures with an active area of 1.0 (or 4.0) mmˆ2 for each pixel. We confirm excellent gain uniformity (< 10%), low dark-noise (< 0.3 nA) measured at room temperature. The energy resolution of 7.2 % (FWHM) was obtained for direct detection of 5.9 keV X-rays, while 10.2 % (FWHM) for 662 keV gamma-rays when coupling with LYSO matrix. An excellent time resolution of 102 ps (FWHM) was obtained for 16 keV X-ray beam. These results suggest these APD arrays can be a promising device for future applications in nuclear medicine.

Author: Dr KATAOKA, Jun

Presenter: Dr KATAOKA, Jun

Session Classification: PET applications

Track Classification: PET applications