

**Measurement of time and spectral characteristics of semiconductor detectors with synchrotron radiation from the VEPP-2M storage ring in the photon energy range of (0.25 +1.25) keV**

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Synchrotron radiation (SR) of electron and positron storage rings is a convenient tool for investigation of time responses and spectral sensitivity of X-ray detectors in a broad spectral range. Strict periodicity of the SR flashes allows usage of stroboscopic registration equipment and guarantees nanosecond and sub-nanosecond time resolution.

This work presents similar measurements of characteristics of the X-ray semiconductor detectors SPPD11, SPPD11-04 and SPPD13 in the ultra soft X-ray range. The measurements were conducted at the "Metrology" station of the VEPP-2M storage ring. The storage ring was assumed as etalon X-ray source with high-accuracy computational spectral and time parameters. The beamline contains no service plugs and provides output of the SR beam with photon energies in the range of (0.25+1.25) keV to the operation station.

The detector spectral sensitivity was restored from the measurements of detector response to the white SR beam, which was passed through a set of certified absorbing filters. The accuracy of measurements is about 5%. The measurements were conducted at two different energy (500 and 391 MeV) of particles in the storage ring. The certification of the filters were provided at the same SR station using the two - mirrors (multilayer mirrors) monochromator. The transmission of the filters was measured directly on the spectral field of near its maximum transparency (near L or K-absorption ages of components of filters).

Fig.1 presents schematically the concept of measurement of pulse characteristic (PC) of detectors in the X-ray range using SR.

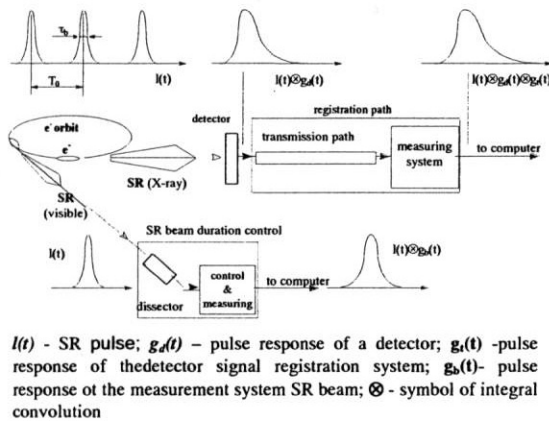


Fig.1 Diagram of the measurements

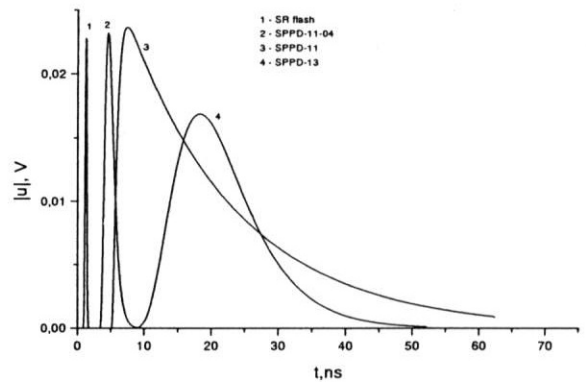


Fig.2 Diagrams of SR flashes and PC of detectors

Pulse characteristics of detectors of the SPPD11, SPPD11-04 and SPPD13 type were obtained in this work, at a bias voltage of 500 to 300 V. Fig.2 presents a typical time diagram of SR flashes and pulse characteristic of detectors.