

ABSTRACT

Method and detector device for position-referred
detection of electromagnetic radiation

The method and the device for image signal decoupling in the case of position-transmitting high-vacuum detector devices for electromagnetic radiation quanta or particles which impinge on a spatially resolving anode structure (2) via a photoelectron converter layer (4) in the case of electromagnetic radiation, and directly via an electron multiplier (3) as an electron avalanche (8) in the case of particle radiation, are distinguished in accordance with the invention in that the electron avalanche (8) is firstly collected for a short time inside the vacuum (7) on the anode side by means of a high-resistance, conducting semiconductor thin film (1), and is read out capacitively from the outside through the glass bottom (counter-substrate 6) of the detector device as an image charge by means of a low-resistance anode layer (2) structured in a fashion suitable for locating.

This capacitive decoupling permits high spatial resolution when the internal resistances of the charge collecting layer (1) on the one hand and the readout anode layer (2) on the other hand are optimally adapted to one another. The type of decoupling according to the invention requires in the vacuum (7) only a simple high-resistance monolayer with a single voltage contact (11). The spatially resolving anode structure (2) outside the vacuum (7) can be modified in accordance with the user's wishes and be exchanged as desired, so that the spatial resolution can be individually adapted.

(Figure 1)