INVESTIGATION OF STEADY STATE X-RAY SENSITIVITY OF SINGLE-CRYSTAL SAPPHIRE SENSORS*

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The paper presents the results of an experimental investigation and simulation of steady state photocurrent of single-crystal sapphire pad sensors when irradiated with X-ray quanta with energies in the range of 10-60 keV.

It has been experimentally shown that single-crystal sapphire sensors are characterized by:

- linear dependence of the photocurrent value on X-ray photon flux intensity;
- sublinear dependence of the photocurrent on the voltage on the sensor;
- absence of polarization effects when irradiated with low-intensity X-ray fluxes.

By comparing the simulated and experimental data on the photocurrent value, the lifetime of nonequilibrium electrons was estimated.

REFERENCES

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