STUDY OF ANGULAR DISTRIBUTION OF QUASIMONOCHROMATIC EUV RADIATION GENERATED BY 5.7 MEV ELECTRONS IN A MO/SI MULTILAYER

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In a number of studies [1-4] it has been theoretically and experimentally shown that at the interaction of a relativistic electron with a periodic structure, a quasimonochromatic component of X-rays is generated in the direction of the Bragg diffraction.

The mechanism of this radiation is similar to the parametric X-ray radiation of relativistic charged particles in crystals. This report presents the results of an experimental study of the angular distribution of EUV radiation generated by 5.7 MeV electrons in a periodical structure of a Mo/Si multilayer. The angular distributions were measured in the diffraction plane and at the angle $\theta_{Dy} = 1/\gamma$ with respect to this plane. The experimental results are compared with the simulation using the theory [2].

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References

[1] V.A.Bazylev, N.K.Zhevago, Radiation of fast particles in matter and in external fields, Nauka, Moscow, 1987
[2] J.-M.André, C.Bonnelle, B.Pardo , NIM A **498** (2003) 532
[3] N.Nasonov, V.Kaplin, S.Uglov, et al, Phys. Rev. E **68** (2003) 036504
[4] V.V.Kaplin, S.R.Uglov, et al., NIM B **276** (2009) 777

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