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PS2-28: Intensive Laue Monochromator for Hard X-rays

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In the works [1,2] it was first observed that the phenomenon of the full pumping of X-rays from transmitted direction to the reflection direction in single quartz crystals in the Laue geometry under the influence of the temperature gradient or acoustic vibrations. In work [3] it was experimentally and theoretically shown that with the help of an acoustic field and temperature gradient it is possible to control the focus location of the diffracted radiation in the space and time.

For the purpose of obtaining a monochromator and a lens with controllable parameters in the range of hard X-rays (30-200 keV) the diffraction of X-radiation in Laue geometry from a quartz single crystal under the influence of a temperature gradient is considered. It is experimentally considered the dependence of the intensity of the diffracted X-radiation of 40 keV from the reflecting atomic planes (10-11) upon the temperature gradient value. The experiment was carried out on the white beam X-ray of Mo anode radiation. As a sample was used quartz single crystal of X-cut with the thickness of 6mm. It was observed the intensity increase of the reflected beam up to 35 times, simultaneously the focusing effect of the reflected beam was observed.

Литература

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