

Poster Presentation

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Focusing of hard X-ray beams in quartz crystal under the temperature gradient

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The research of the focusing and defocusing of the diffracted X-rays with different wave fronts in crystals under the influences of the temperature gradient and the ultrasonic vibrations is given in the works [1,2].

This work is dedicated experimental investigation of Laue diffraction of the hard X-rays in quartz single crystals under the influence of the temperature gradient. It is shown that the reflected beams under the influence of the temperature gradient are focused. When the vector of the temperature gradient is anti parallel to the diffraction vector, in accordance to the increasing value of the temperature gradient the focus point continuously approaches the crystal. When the vector of the temperature gradient is parallel to the diffraction vector, in accordance with the increasing value of the temperature gradient the focus point continuously distances itself from the crystal, and at a certain value of the temperature gradient it becomes a plane wave. Parallel to the further increasing of the temperature gradient we see an imaginary focus, which continuously approaches the entry surface of the crystal. It is shown that by using a thicker single crystal it is possible to focus and pump a larger angular and spectral width of X-rays in the direction of diffraction.

[1] A.R. Mkrtychyan, M.A. Navasardian, R.G. Gabrielyan, L.A. Kocharian and R.N. Kuzmin, *Solid State Communications*, V. 59, 147-149, 1986., [2] S.N. Noreyan, V.K. Mirzoyan, V.R. Kocharyan 2004, *Izvestia NAN Armenii, Fizika*, , Vol. 39, No. 2, 124-130.

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