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INFLUENCE OF FARADAY ELLIPTICAL BIREFRINGENCE ON THE ACOUSTO-OPTIC DIFFRACTION EFFICIENCY: A CASE OF ISOTROPIC INTERACTION WITH QUASI-LONGITUDINAL ACOUSTIC WAVES IN KH_2PO_4 CRYSTALS. ERRATA

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Abstract. We introduce corrections to our recent article [1. O. Mys, D. Adamenko and R. Vlokh. 2023. Influence of Faraday elliptical birefringence on the acousto-optic diffraction efficiency: a case of isotropic interaction with quasi-longitudinal acoustic waves in KH_2PO_4 crystals. **24**(1): 95-103.]

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We have found errors in our recent work [1]. Correction of these errors includes the following changes that must be introduced in its text and formulae. Below Eq. (6), the sentence should be written as: "… and θ implies the angle between the normal direction to the wavevector of the AW and the *Z* axis.". Above Eq. (10), the sentence should be written as: "… angle Θ' between the bisector of the *X* and *Y* axes (i.e., the *X* ' axis) and the wavevector of the AW can be written as".
Eqs. (7-12) should be written as:

$$p_{eff}^{2(I)} = \left(p_{12}\cos\Theta\cos\zeta_2 + p_{13}\sin\Theta\sin\zeta_2\right)^2 + 0.5\chi^2\begin{pmatrix}\left(p_{11}\cos\Theta\cos\zeta_2 + p_{13}\sin\Theta\sin\zeta_2\right)^2\cos^4\Theta \\ +\left(p_{31}\cos\Theta\cos\zeta_2 + p_{33}\sin\Theta\sin\zeta_2\right)^2\sin^4\Theta \\ +0.5\left(p_{44}\sin(\zeta_2+\Theta)\right)^2\sin^2 2\Theta + \left(p_{11}\cos\Theta\cos\zeta_2 + p_{13}\sin\Theta\sin\zeta_2\right) \\ \times\left(p_{44}\sin(\zeta_2+\Theta)\right)\sin 2\Theta\cos^2\Theta + \left(p_{44}\sin(\zeta_2+\Theta)\right) \\ \times\left(p_{31}\cos\Theta\cos\zeta_2 + p_{33}\sin\Theta\sin\zeta_2\right)\sin 2\Theta\sin^2\Theta\end{pmatrix}, \quad (7)$$

$$p_{eff}^{2(II)} = \cos^2(\theta_B+\Theta)\begin{bmatrix}(p_{11}\cos\Theta\cos\zeta_2 + p_{13}\sin\Theta\sin\zeta_2)^2 \\ \times\cos^2\Theta + \left(p_{44}\sin(\zeta_2+\Theta)\right)^2\sin^2\Theta\end{bmatrix} + \left(p_{44}\sin(\zeta_2+\Theta)\right)\sin 2\Theta\begin{bmatrix}(p_{11}\cos\Theta\cos\zeta_2 + p_{13}\sin\Theta\sin\zeta_2)\cos^2\Theta \\ +(p_{31}\cos\Theta\cos\zeta_2 + p_{33}\sin\Theta\sin\zeta_2)\sin^2\Theta\end{bmatrix}, \quad (8)$$
$$+\sin^2(\theta_B+\Theta)\begin{bmatrix}\left(p_{44}\sin(\zeta_2+\Theta)\right)^2\cos^2\Theta \\ +(p_{31}\cos\Theta\cos\zeta_2 + p_{33}\sin\Theta\sin\zeta_2)^2\sin^2\Theta\end{bmatrix}$$
$$+\chi^2\left[(p_{12}\cos\Theta\cos\zeta_2 + p_{13}\sin\Theta\sin\zeta_2)^2\right]$$

$$v_{QL}^2(\Theta)=\frac{1}{2\rho}\left(\begin{array}{l}(C_{11}+C_{44})\cos^2\Theta+(C_{44}+C_{33})\sin^2\Theta+\\+\sqrt{((C_{11}-C_{44})\cos^2\Theta+(C_{44}-C_{33})\sin^2\Theta)^2+(C_{13}+C_{44})^2\sin^2 2\Theta}\end{array}\right), \tag{9}$$

$$v_{QL}^2(\Theta')=\frac{1}{2\rho}\left(\begin{array}{l}(0.5(C_{11}+C_{12}+2C_{66})+C_{44})\cos^2\Theta'+(C_{44}+C_{33})\sin^2\Theta'+\\+\sqrt{\left(\begin{array}{l}(0.5(C_{11}+C_{12}+2C_{66})-C_{44})\cos^2\Theta'\\+(C_{44}-C_{33})\sin^2\Theta'\end{array}\right)^2+(C_{13}+C_{44})^2\sin^2 2\Theta'}\end{array}\right), \tag{10}$$

$$p_{eff}^{2(I)}=(p_{12}\cos\Theta'\cos\zeta'_2+p_{13}\sin\Theta'\sin\zeta'_2)^2$$
$$+0.5\chi^2\left(\begin{array}{l}(0.5(p_{11}+p_{12}+0.5p_{66})\cos\Theta'\cos\zeta'_2+p_{13}\sin\Theta'\sin\zeta'_2)^2\cos^4\Theta'\\+(p_{31}\cos\Theta'\cos\zeta'_2+p_{33}\sin\Theta'\sin\zeta'_2)^2\sin^4\Theta'\\+0.5(p_{44}\sin(\zeta'_2+\Theta'))^2\sin^2 2\Theta'\\+(0.5(p_{11}+p_{12}+0.5p_{66})\cos\Theta'\cos\zeta'_2+p_{13}\sin\Theta'\sin\zeta'_2)\\\times(p_{44}\sin(\zeta'_2+\Theta'))\sin 2\Theta'\cos^2\Theta'+(p_{44}\sin(\zeta'_2+\Theta'))\\\times(p_{31}\cos\Theta'\cos\zeta'_2+p_{33}\sin\Theta'\sin\zeta'_2)\sin 2\Theta'\sin^2\Theta'\end{array}\right), \tag{11}$$

$$\begin{aligned}p_{eff}^{2(II)}&=\cos^2(\theta_B+\Theta')\\&\times\left[\begin{array}{l}(0.5(p_{11}+p_{12}+0.5p_{66})\cos\Theta'\cos\zeta'_2+p_{13}\sin\Theta'\sin\zeta'_2)^2\\\times\cos^2\Theta'+(p_{44}\sin(\zeta'_2+\Theta'))^2\sin^2\Theta'\end{array}\right]\\&+(p_{44}\sin(\zeta'_2+\Theta'))\sin 2\Theta'\\&\times\left[\begin{array}{l}(0.5(p_{11}+p_{12}+0.5p_{66})\cos\Theta'\cos\zeta'_2+p_{13}\sin\Theta'\sin\zeta'_2)\\\times\cos^2\Theta'+(p_{31}\cos\Theta'\cos\zeta'_2+p_{33}\sin\Theta'\sin\zeta'_2)\sin^2\Theta'\end{array}\right]\\&+\sin^2(\theta_B+\Theta')\left[\begin{array}{l}(p_{44}\sin(\zeta'_2+\theta))^2\cos^2\Theta'\\+(p_{31}\cos\Theta'\cos\zeta'_2+p_{33}\sin\Theta'\sin\zeta'_2)^2\sin^2\Theta'\end{array}\right]\\&+\chi^2\left[(p_{12}\cos\Theta'\cos\zeta'_2+p_{13}\sin\Theta'\sin\zeta'_2)^2\right].\end{aligned} \tag{12}$$

Reference

1. Mys, O., Adamenko, D., Vlokh R. 2023. Influence of Faraday elliptical birefringence on the acousto-optic diffraction efficiency: a case of isotropic interaction with quasi-longitudinal acoustsic waves in KH_2PO_4 crystals. **24**(1): 95-103.

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Анотація. *Ми вносимо виправлення до нашої нещодавньої статті [1. O. Mys, D. Adamenko and R. Vlokh. 2023. Influence of Faraday elliptical birefringence on the acousto-optic diffraction efficiency: a case of isotropic interaction with quasi-longitudinal acoustic waves in KH_2PO_4 crystals. 24(1): 95-103.]*

Ключові слова*: акустооптика, ефект Фарадея, еліптичність власних хвиль, дифракційна ефективність, кристали KH_2PO_4*