

## Kossel lines and X-ray localized conical modes

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An alternative way to describe the X-ray Kossel lines [1] assuming that their origin is due to an excitation by the X-Ray emitting atom of localized conical X-Ray modes existing in perfect crystals is proposed. A theory of the X-ray Kossel lines is presented in the framework of two-wave dynamical diffraction approximation for the conical modes [2]. The theoretical results compared with the known experimental results show a good general agreement with the main experimental observation as for the X-ray [3], so for the optical [4] Kossel line patterns. The influence of crucial parameters of the crystal (absorption, perfection, sample size, the Borrmann Effect etc.) on the shape of Kossel lines are discussed. For confirming a direct connection of Kossel lines with the localized conical X-Ray modes is proposed to apply a time-delayed techniques in studying the Kossel lines. A direct dependence of the Kossel line patterns on the sample eigen modes is revealed by Kossel lines in defect structures where contrary to perfect samples (with forbidden Kossel line frequencies in the stop band range) the Kossel line frequencies might to be located inside the stop band frequencies interval [5].

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