

Abstract Submitted  
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**Accurate Formulation and Numerical Calculation of Faraday, Magnetic Circular Dichroism (MCD) and Kerr Effect of Light in Magnetized Cubic Crystal**<sup>1</sup> JIN T. WANG, SEAN HALL, YI ZHEN, DONG-SHENG GUO, Southern University, SUBR-P TEAM — Faraday, magnetic circular dichroism and Kerr effects are three important magneto-optic effects. They are significant in fundamental sciences and applications. Presently, scientists in this field believed that Faraday and Kerr effects are caused by the difference in real parts of the refractive indices of the magnetic crystal for left-and right-circularly polarized light and the magnetic circular dichroism is caused by the difference in the imaginary parts of the refractive index (absorption) of the magnetic crystal for left-and right-circularly polarized light. However, the derived equations for these effects are approximated only. In our paper we obtained accurate formulations for these effects and found that there are mistakes in the present conclusions with respect to the above mentioned these effects. The precise equations, conclusions from our derivation and the results of numerical calculation are presented.

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