ON THE VERDET CONSTANT AND FARADAY ROTATION FOR GRAPHENE-LIKE MATERIALS

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We present a rigorous and rather self-contained analysis of the Verdet constant in graphene-like materials. We apply the magnetic perturbation theory to a tight-binding model and obtain a relatively simple and exactly computable formula for the Verdet constant, at all temperatures and frequencies. Moreover, for our nearest-neighbor model of graphene we show that the transverse component of the conductivity tensor has an asymptotic Taylor expansion in the external magnetic field where all the coefficients of even powers are zero. Joint work with H.D. Cornean.