The role of elasticity on intrinsic anomalous Hall effect in Ni

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The anomalous Hall effect (AHE) is commonly observed phenomena in magnetic systems, where 3d ferromagnetic metals are epitomic examples[1-4]. In last decade, the intrinsic anomalous Hall effect (AHE) is well formulated in the framework of Berry phase formalism. In this study, the role of elasticity on AHE in fcc Ni has been investigated using first-principles calculations, where Wannier functions are fully exploited. Different lattice distortions along the (001), (110), and (111) are taken into account while volume is kept constant. The resulting AHE, more specifically, the Berry curvature for different lattice strains are discussed, where exhaustive analysis in Brillouine zone is provided regarding level degeneracies, changes in momentum matrices, and so forth.

References

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