# The enhancement of the magneto-optical effects by Bi in $(Rh/Ir)_2MnAl$ – first-principle study

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We have performed first-principle calculations to investigate structural, electronic and optical properties of $(Rh/Ir)_2MnAl$ and $(Rh/Ir)_2MnBi$ Heusler alloys using density functional theory [1]. Three spin orderings, i.e. ferromagnetic and antiferromagnetic along [001] and [111] crystal axis were considered. In contrast to the experimental study [2], where the antiferromagnetic ordering was detected with high Neel temperature, our calculations show that the $Rh_2MnAl$ possesses the lowest total energy with ferromagnetic ordering. Therefore, considering the ferromagnetic ordering we investigate the enahcement of the Kerr rotation and elipticity by the substitution of Al by Bi within 0-10 eV energy range.

**References:**

[1] P. Hohenberg and W. Kohn, Phys. Rev. 136, B864 (1964).
[2] H. Masumoto and K. Watanabe, J. Phys. Soc. Jpn., 32, 281-281 (1972).