

Using electronic and magnetic properties of Heusler compounds to build a new generation of electronic devices

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Realize electronic devices based on semiconductors become so limited. This due to the quantum effects appear at the nanolevel which affect the physical and chemical characteristics of semiconductor. Many suggestions and ideas are proposed to solve the problem. Solving this problem, we have searched for other metals which have better electronic and magnetic properties. Among those we focus on the Heusler compounds. Heusler compounds as Cobalt base alloys (Co_2YZ) present a particular interest for the spin electronics applications. In this work, we present properties and results about the two Cobalt base alloys the Co_2FeGa and Co_2FeSi . The electronic and the magnetic properties of these alloys are interested for realizing such new generation of electronic devices and quantum devices. In this work we use the Density Functional Theory and the WIEN2K program to achieve these properties of the Heusler compounds.

Key Words: Heusler alloys, Co_2FeGa , Co_2FeSi , Quantum Computation, magnetic properties, electronic properties.